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August 27, 2014

Filed By ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, DC 20554

**Re: ERRATUM - Applications of Comcast Corp. and Time Warner Cable Inc. for
Consent to Assign or Transfer Control of Licenses and Authorizations, Docket No.
14-57**

Dear Ms. Dortch:

In accordance with the *Joint Protective Order*,¹ Netflix, Inc. resubmits the attached redacted version of its Petition to Deny, originally filed on August 25, 2014, with the following corrections:

The first sentence of the paragraph beginning on page 49 has been changed to read: “Globally, Netflix delivers its traffic without payment to 99 percent of terminating access networks.”

The last sentence beginning on page 83 has been changed to read: “From the Applicants’ perspective, this reduction in output is a powerful reason for the Transaction.”

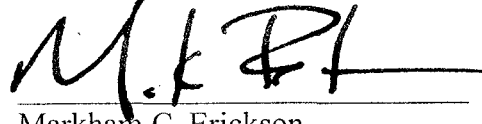
The “[]” symbols denote where Confidential Information has been redacted, and the “{ }” symbols denote where Highly Confidential Information has been redacted. The Confidential and Highly Confidential versions of this filing are being simultaneously filed with the Commission and will be made available pursuant to the terms of the *Joint Protective Order*.

Please contact me with any questions.

¹ Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, MB Docket No. 14-57, *Joint Protective Order*, DA 14-463 (Apr. 4, 2014).

Marlene H. Dortch
August 27, 2014
Page 2

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'M. C. Erickson', written over a horizontal line.

Markham C. Erickson
Counsel for Netflix, Inc.

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**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
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Applications of Comcast Corp. and Time)	MB Docket No. 14-57
Warner Cable Inc. for Consent to Transfer)	
Control of Licenses and Authorizations)	
)	

PETITION TO DENY OF NETFLIX, INC.

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August 27, 2014

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TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
I. INTRODUCTION.....	1
II. STANDARD OF REVIEW	3
A. The Commission’s Broader Public Interest Analysis	4
B. Antitrust Principles and the Commission’s Analysis of Competition.....	5
C. Burden of Persuasion and Affirmative Finding of Competitive Benefits.....	7
III. RELEVANT MARKETS	8
A. National High-Speed Broadband Distribution of Edge Provider Content.....	10
1. Product Market: High-Speed Distribution of Edge Provider Content.....	10
2. Geographic Market: National.....	24
B. Video Programming Distribution.....	27
IV. THE MERGED ENTITY’S INCENTIVE TO HARM EDGE PROVIDERS AND DIMINISH COMPETITION IN THE VIDEO MARKETPLACE IS WELL ESTABLISHED	29
A. Applicants Have the Incentive to Protect Both Their Linear Video Services and Affiliated OVDs From Competition	29
B. Applicants Are Developing Services to Compete With OVDs While Protecting Their Current Bundling Strategies.....	31
C. The Best Indication of Comcast’s Incentives Is Its Conduct	34
V. APPLICANTS ALREADY HAVE THE ABILITY TO HARM OVDS.....	34
A. Comcast and Time Warner Already Have Market Power in Local High-Speed Broadband Internet Access Service Markets	35
1. There is Minimal Competition for High-Speed Wired Connections	36
2. High Switching Costs Prevent Consumers from Changing ISPs	37

REDACTED - FOR PUBLIC INSPECTION

B.	Four Terminating Access Networks (Including Comcast and TWC) Already Have Demonstrated Ability to Leverage Control of Interconnection to Foreclose OVDs or Raise Their Costs	42
1.	Four Terminating Access Networks Can Congest Routes into Their Networks and Extract Terminating Access Fees from Edge Providers	43
2.	An OVD's Ability to Manage Congestion at Interconnection Points Is Critical to Delivering its Service to its Customers	46
3.	Large Terminating Access Networks Can Extract Terminating Access Fees Because They Pose a Significant Threat to OVDs with Fixed-Costs for Content.....	50
C.	Comcast Already Has Exercised Its Market Power over Netflix by Leveraging Congestion to Shift Netflix Traffic to Paid Interconnection	52
1.	There Are No Technological, Economic, or Regulatory Impediments to Large Terminating Access Networks Pursuing Congestion Strategies.....	60
2.	Marginal Costs of Interconnection Do Not Justify Terminating Access Fees.....	64
3.	Traffic Ratios Do Not Justify Payment of Terminating Access Fees	68
D.	Comcast Already Has Used Data Caps and Restrictions on User Devices to Harm OVDs and Consumers.....	71
1.	Comcast Already Has Used Data Caps to Push Consumers Away from OVDs.....	71
2.	Comcast Already Has the Ability to Leverage Control of Devices to Control Content Distribution	73
VI.	THE TRANSACTION WOULD INCREASE COMCAST'S EXISTING INCENTIVE AND ABILITY TO HARM OVDs BY CREATING AN EVEN LARGER TERMINATING ACCESS NETWORK.....	75
A.	The Transaction Would Extend Comcast's Ability to Harm OVDs to TWC's Network	77
B.	The Sheer Size of the Combined Entity Would Threaten OVDs	79

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C.	The Transaction Would Give the Combined Entity an Increased Ability to Raise OVDs' Costs	84
D.	Comcast's Ability to Leverage Data Caps and Power over Consumer Devices Will Extend to TWC	87
VII.	FORECLOSURE OF EDGE PROVIDERS WOULD LEAD TO OTHER SIGNIFICANT PUBLIC INTEREST HARMS.....	89
A.	The Transaction Would Decrease Program Diversity	90
B.	The Transaction Would Diminish Consumer Choice and Value	92
C.	The Transaction Would Inhibit Broadband Investment and Deployment.....	93
VIII.	APPLICANTS' CLAIMED PUBLIC INTEREST BENEFITS ARE TENUOUS, NON-MERGER SPECIFIC, AND UNDERMINED BY COMCAST'S INCENTIVE AND ABILITY TO DISCRIMINATE AGAINST OVDS	94
A.	Many of the Purported Public Interest Benefits Rely on Competition from the Very Entities That the Merged Entity Would Have the Incentive to Harm	95
B.	Many of Applicants' Proposed Benefits Are Weak, Speculative, or Non-Existent	96
1.	The NBCU Conditions Are Not Public Interest Benefits from This Transaction	97
2.	Increased Scale Is Not By Itself a Public-Interest Benefit.....	97
3.	Comcast's Acceleration of TWC's Broadband Deployment and Technological Innovations Provide Only a Minor Public Interest Benefit.....	99
IX.	CONCLUSION	99

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EXECUTIVE SUMMARY

Comcast Corporation (“Comcast”) and Time Warner Cable, Inc. (“TWC”) (together, “Applicants”) ask the Federal Communications Commission (“FCC” or “Commission”) to approve their application to become the nation’s largest onramp to the Internet. The Commission should reject the request.

The proposed merger puts at risk the end-to-end principle that has characterized the Internet and been a key driver in the creation of the most important communications platform in history. Unsurprisingly, given their dominance in the cable television marketplace, the proposed merger would give Applicants the ability to turn a consumer’s Internet experience into something that more closely resembles cable television. It would set up an ecosystem that calls into question what we to date have taken for granted: that a consumer who pays for connectivity to the Internet will be able to get the content she requests.

The combined entity would have the incentive and ability—through access fees charged at interconnection points and by other means—to harm Internet companies, such as online video distributors (“OVDs”), which Applicants view as competitors. The transaction would give Applicants control of a dominant share of the nation’s residential high-speed broadband customers at a time when those customers increasingly engage with more content-rich applications that require high-speed broadband to work properly, such as Internet-delivered video.

Regulators faced a nearly identical fact pattern 14 years ago when AT&T and MediaOne—then the nation’s two largest cable companies—sought to merge. The combined company would have controlled nearly 40 percent of the nation’s broadband households. AT&T owned a majority stake in a broadband provider known as Excite@Home and MediaOne owned a substantial stake in a broadband provider known as RoadRunner. The federal government intervened, however, and insisted that those applicants divest one of the broadband businesses, because the combined company otherwise would have had a significantly increased ability to harm Internet content providers in the national market for high-speed broadband distribution of edge provider content.

Applicants fail to account for this precedent. They fail to identify, let alone address, the Department of Justice’s (“DOJ”) and Commission’s view of the relevant market by which the government should view this transaction. And, they fail to address the identified harms, required divestitures, and other remedies involved in the *AT&T-MediaOne* merger.

This Transaction is proposed at a critical time for consumers. OVDs have re-imagined the way in which consumers access and enjoy video content—enabling consumers to access through an intuitive user interface a rich library of content at times and locations of the customer’s choosing. In response to OVD innovation, users increasingly demand more Internet-delivered video that they have paid high-speed broadband providers to access. In turn, broadband providers can attract new subscribers and sell existing customers more robust Internet speeds. The Commission has identified this phenomenon as a “virtuous circle.” As a result of this phenomenon, there are now more broadband subscribers than MVPD subscribers in the country.

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Despite the boon OVDs have been for the broadband market, Applicants are clear that they see OVDs as a threat to their core video business. Comcast already has acted to lessen that threat by using its control over interconnection pathways to allow its own customers' access to Netflix content to degrade until Netflix paid Comcast a terminating access fee. OVDs are particularly vulnerable to congestion and degradation of their services, owing to the myriad video providers available to consumers, the low costs of switching OVDs, and the sensitivity to congestion of video streaming traffic.

At the same time, there is nothing in the market to discipline the behavior of the combined entity: Comcast's and TWC's customers often lack any (let alone several) viable alternative broadband provider that is capable of providing the download speeds necessary to enjoy video content; and the high cost of switching ISPs, compared to the low cost of switching OVDs, makes it likely that OVDs will feel the brunt of consumer disappointment, not ISPs. In addition, at the same time Comcast engaged in strategies to degrade its own customers' ability to watch Netflix's video, Comcast sold customers who wanted access to high-quality Netflix video a more expensive broadband package even as it knew that a higher-speed broadband plan would do nothing to address the quality of Netflix's video.

In Netflix's experience, there are four ISPs that have the market power to engage in degradation strategies to harm OVDs. Two of those four propose to merge in this Transaction. Consequently, the proposed merger would significantly strengthen the harms to consumers and to Internet content distributors, such as OVDs. The business models employed by several OVDs necessarily depend on having access to a "critical mass" of consumers to operate profitably. Achieving and maintaining this critical mass allows OVDs to purchase programming and develop products more cheaply, but it also goes to the heart of an OVD's ability to retain subscribers and invest in new content. Particularly for fixed-cost OVDs the sudden loss of access to a significant number of customers could immediately throw the OVD into financial peril. And as a result of this merger, Comcast would have significantly greater power to engage in a variety of foreclosure strategies to make it harder for OVDs to provide streaming services to Comcast subscribers, including raising-rivals-costs strategies to squeeze the finances of OVDs. More troubling, Comcast may become large enough as a result of this merger to prevent a new OVD from ever reaching the critical mass necessary to provide viable national service to American consumers.

Comcast has suggested that OVDs should be required to pay interconnection fees to help pay for all the traffic they are "dumping" onto its network. This characterization is false. Netflix does not deliver a single bit of traffic that a broadband provider's customer does not request. Moreover, OVDs pay content delivery networks ("CDNs") and transit providers, at great expense, to carry that requested traffic all the way to Comcast's door step. Comcast's only responsibility is to do what it already has assured its customers it will do: carry that traffic the remainder of the way and at the speed for which Comcast's own customers already have paid.

This threat to the OVD industry is significant and a fundamental public interest harm too heavy to be balanced against the speculative benefits of this Transaction. Moreover, that threat also

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undermines Applicants' proposed public interest benefits, which expressly depend on the viability of existing OVDs and the ability of new OVDs to reach the critical mass necessary to operate.

Nor is this threat limited to OVDs. The combined entity's control over its interconnection arrangements, coupled with such an increase in size, would allow it to insert itself into the heart of all Internet commerce, disrupting innovation, reducing financing for edge providers, and foreclosing compelling services from ever reaching the light of day. While this threat remains, the proposed merger cannot be justified under the FCC's public interest standard.

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**Before the
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Control of Licenses and Authorizations)	
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PETITION TO DENY OF NETFLIX, INC.

I. INTRODUCTION

Netflix, Inc. (“Netflix”) files this Petition asking the Commission to deny the proposed transaction (“the Transaction”) between Comcast and Time Warner Cable (“TWC”). The Commission already has determined that Comcast has the incentive and ability to discriminate against online video distributors (“OVDs”), and Comcast recently has shown that it is willing to go to great lengths to do so by manipulating Internet traffic at the interconnection points within its network to harm Netflix. Approving the proposed Transaction would serve only to heighten that public interest harm and extend it to TWC’s current consumer base.

Netflix is the world’s leading Internet television provider with over 50 million members in more than 40 countries enjoying more than one billion hours of TV shows and movies per month, including Netflix’s original series. For a low monthly price—about nine dollars, or what Applicants charge to rent two movies—Netflix members can watch as much as they want, anytime, anywhere, on nearly any Internet-connected screen.

Since launching our streaming service in 2007, Netflix has increased in popularity both domestically and internationally. The service is available on a broad array of consumer

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electronic devices, including Internet-connected TVs and set-top boxes, game consoles, computers, tablets, and mobile phones. As Netflix's service has grown, our content has evolved from an eclectic offering of older movies and TV shows to award winning original productions, such as *House of Cards* and *Orange is the New Black*. This year, Netflix's original programming was honored with a record 31 Emmy nominations, the most ever for an online subscription-television service.¹ Likewise, as technology has improved, including the continued advancing speeds of cable broadband, our service has begun to offer its members new and innovative features, including higher resolution 4K content—a resolution that is unavailable through traditional MVPD services.

The ability of edge providers like Netflix to innovate, grow, and offer consumers new and exciting ways to enjoy online content depends on their ability to access high-speed broadband capable of distributing rich media and interactive content, such as high-quality video. Applicants claim that the Transaction would be a net positive for edge providers, but the cold, hard economic facts and Comcast's past behavior prove otherwise. If approved, the Transaction will result in one provider passing more than half of the country's addressable broadband households being passed by one provider. Post-transaction, the combined entity's unparalleled number of subscribers and status as the largest terminating access network would give it significantly greater and unrivaled power to harm edge providers, and the consumers of those edge providers, through foreclosure, raising rivals' costs, and discriminatory strategies. While this threat remains, the proposed merger cannot be justified under the FCC's public interest standard.

¹ David Zurawik, *Netflix Rising to TV Top with Emmy Nominations for 'Cards,' 'Orange'*, The Baltimore Sun (Jul. 11, 2014), available at <http://touch.baltimoresun.com/#section/-1/article/p2p-80780039/>.

II. STANDARD OF REVIEW

Pursuant to Section 310(d) of the Communications Act of 1934, the Commission must determine whether the proposed Transaction would serve “the public interest, convenience, and necessity.”² The Commission must evaluate whether the Transaction could result in public interest harms by frustrating or impairing the objectives or implementation of the Act or related statutes, and whether the Transaction complies with specific applicable laws and regulations.³ If the Transaction is consistent with the Act and its comprehensive objectives, the Commission must assess whether the Transaction would enhance competition in an analysis informed by traditional antitrust principles and its broader public interest mandate. Applicants bear the burden of proving affirmatively that the Transaction would serve the public interest, convenience, and necessity and would be beneficial to competition. If the Commission is unable to find that the proposed Transaction serves the public interest for any reason, or if the record presents a substantial and material question of fact, the Commission must designate the Application for hearing.⁴

² 47 U.S.C. § 310(d); Applications of Comcast Corp., General Electric Co. and NBC Universal, Inc. for Consent to Assign Licenses and Transfer Control of Licensees, *Memorandum Opinion and Order*, 26 FCC Rcd. 4238, 4247 ¶ 22 (2011) (“*Comcast-NBCU Order*”).

³ See Applications for Consent to the Transfer of Control of Licenses, XM Satellite Radio Holdings Inc., Transferor, to Sirius Satellite Radio Inc., Transferee, *Memorandum Opinion and Order and Report and Order*, 23 FCC Rcd. 12348, 12363-64 ¶ 30 (2008) (“*Sirius-XM Order*”); News Corp. and DIRECTV Group, Inc. and Liberty Media Corp. for Authority to Transfer Control, *Memorandum Opinion and Order*, 23 FCC Rcd. 3265, 3276-77 ¶ 22 (2008) (“*Liberty Media-DIRECTV Order*”); SBC Commc’ns Inc. and AT&T Corp. Applications for Approval of Transfer of Control, *Memorandum Opinion and Order*, 20 FCC Rcd. 18290, 18300 ¶ 16 (2005) (“*SBC-AT&T Order*”).

⁴ 47 U.S.C. § 309(e); see also *Sirius-XM Order*, 23 FCC Rcd. at 12364, ¶ 30; *Liberty Media-DIRECTV Order*, 23 FCC Rcd. at 3277 ¶ 22; General Motors Corp. and Hughes Electronics Corp., and The News Corp. Limited, *Memorandum Opinion and Order*, 19 FCC Rcd. 473, 483 n. 49 (2004) (“*News Corp.-Hughes Order*”); Application of EchoStar Communications Corp.,

A. The Commission's Broader Public Interest Analysis

The Commission's public interest determination encompasses the "broad aims of the Communications Act,"⁵ which include a "deeply rooted preference for preserving and enhancing competition in relevant markets, accelerating private-sector deployment of advanced services, [and] ensuring a diversity of information sources and services to the public."⁶ As part of this comprehensive review, the Commission incorporates traditional antitrust principles and a wide-ranging inquiry into whether the proposed merger would serve the public interest. Key to this proceeding is the mandate to "encourage the deployment on a reasonable and timely basis of advanced telecommunications capability to all Americans . . . by utilizing, in a manner consistent with the public interest . . . methods that remove barriers to investment" and "by promoting competition in the telecommunications market."⁷

General Motors Corp., and Hughes Electronics Corp. and EchoStar Communications Corp., *Hearing Designation Order*, 17 FCC Rcd. 20559, 20574 ¶ 25 (2002) ("*EchoStar-DIRECTV HDO*").

⁵ *Comcast-NBCU Order*, 26 FCC Rcd. at 4248 ¶ 23; Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations from MediaOne Group, Inc. to AT&T Corp., *Memorandum and Order*, 15 FCC Rcd. 9816, 9821 ¶ 11 (2000) ("*AT&T-MediaOne Order*").

⁶ *Comcast-NBCU Order*, 26 FCC Rcd. at 4248 ¶ 23 (citing 47 U.S.C. § 532(a); 47 U.S.C. § 521(4)); Jon Sallet, General Counsel, FCC, *FCC Transaction Review: Competition and the Public Interest*, Official FCC Blog, (Aug. 12, 2014), <http://www.fcc.gov/blog/fcc-transaction-review-competition-and-public-interest> ("*Sallet Blog*").

⁷ Telecommunications Act of 1996, Pub. L. No. 104-104, 110 Stat. 56 (1996), § 706(a), (b) (codified at 47 U.S.C. § 1302(a), (b)).

B. Antitrust Principles and the Commission's Analysis of Competition

The Commission's analysis is informed by traditional antitrust principles,⁸ which dictate that agencies prohibit transactions that substantially lessen competition or tend to create a monopoly in any line of commerce,⁹ and the Horizontal Merger Guidelines, which require the antitrust agencies to "interdict competitive problems in their incipiency" by identifying and preventing mergers that are likely to result in highly concentrated markets.¹⁰ Where a merger is substantially likely to create, enhance, or entrench market power or facilitate its exercise, the Guidelines require applicants to show "extraordinarily great cognizable efficiencies" to rebut the presumption that the merger would enhance market power.¹¹ The agency need not define potential anticompetitive effects with certainty to challenge a merger as unlawful.¹²

⁸ *Comcast-NBCU Order*, 26 FCC Rcd. at 4248 ¶ 24; *see also Sirius-XM Order*, 23 FCC Rcd. at 12365 ¶ 32; *Liberty Media-DIRECTV Order*, 23 FCC Rcd. at 3278 ¶ 24; Applications of AT&T Wireless Services, Inc. and Cingular Wireless Corp. for Consent to Transfer Control of Licenses and Authorizations, 19 FCC Rcd. 21522, 21544-45 ¶ 42; Application of GTE Corp., Transferor, and Bell Atlantic Corp., Transferee, for Consent to Transfer Control of Domestic and International Authorizations and Application to Transfer Control of a Submarine Landing License, *Memorandum Opinion and Order*, 15 FCC Rcd. 14032, 14046 ¶ 23 (2000) ("*Bell Atlantic-GTE Order*").

⁹ 15 U.S.C. § 18.

¹⁰ Dep't of Justice and Federal Trade Comm'n, Horizontal Merger Guidelines § 1 (2010), available at <http://www.ftc.gov/sites/default/files/attachments/merger-review/100819hmg.pdf> ("*Horizontal Merger Guidelines*").

¹¹ *Id.* at § 2.1.3, 10; *see also F.T.C. v. H.J. Heinz Co.*, 246 F.3d 708, 720-21 (D.C. Cir. 2001) ([H]igh market concentration levels . . . require, in rebuttal, proof of extraordinary efficiencies . . . Moreover, given the high concentration levels, the court must undertake a rigorous analysis of the kinds of efficiencies being urged by the parties in order to ensure that those 'efficiencies' represent more than mere speculation and promises about post-merger behavior.").

¹² *Horizontal Merger Guidelines* at § 1.

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The Commission's evaluation "often takes a more expansive view of potential and future competition in analyzing that issue,"¹³ including whether the transaction would lessen competition. The Commission also must determine "whether a transaction will enhance, rather than merely preserve, existing competition,"¹⁴ and whether the merger "will accelerate the decline of market power by dominant firms in relevant communications markets."¹⁵

Further, the Commission also must ensure that competition "is shaped not only by antitrust rules, but also by regulatory policies that govern the interactions of industry players."¹⁶ In particular, the Commission must "open all communications markets to competition . . . and the acceleration of private sector deployment of advanced service[.]" and determine whether the

¹³ *Comcast-NBCU Order*, 26 FCC Rcd. at 4248 ¶ 24; *Sirius-XM Order*, 23 FCC Rcd. at 12366 ¶ 32; *Liberty Media-DIRECTV Order*, 23 FCC Rcd. at 3278 ¶ 24; *Bell Atlantic-GTE Order*, 15 FCC Rcd. at 14046 ¶ 23; Application for Consent to Transfer of Control of Licenses from Comcast Corp. and AT&T Corp., Transferors, to AT&T Comcast Corp., Transferee, *Memorandum Opinion and Order*, 17 FCC Rcd. 23246, 23256 ¶ 28 (2002) ("*Comcast-AT&T Order*"); AT&T Corp., British Telecommunications, plc, VLT Co. L.L.C., Violet License Co. LLC, and TNV [Bahamas] Ltd. Applications for Grant of Section 214 Authority, Modification of Authorizations and Assignment of Licenses in Connections with the Proposed Joint Venture Between AT&T Corp. and British Telecommunications, plc, *Memorandum Opinion and Order*, 14 FCC Rcd. 19140, 19147-48 ¶ 15 (1999) ("*AT&T Corp.-British Telecom Order*").

¹⁴ *See id.* The Commission has also noted that it must "be convinced that [a transaction] will enhance competition" in order to find that a merger is in the public interest. *See* Applications of Ameritech and SBC Commc'ns for Consent to Transfer of Control of Licenses and Authorizations, *Memorandum Opinion and Order*, 14 FCC Rcd. 14712, 14738 ¶ 49 (1999) (emphasis added) ("*Ameritech-SBC Order*") (citing Applications of NYNEX Corp. Transferor, and Bell Atlantic Corp. Transferee, for Consent to Transfer Control of NYNEX Corporation and Its Subsidiaries, *Memorandum Opinion and Order*, 12 FCC Rcd. 19985, 19987 ¶ 2 (1997) ("*Bell Atlantic-NYNEX Order*")) (emphasis added).

¹⁵ *AT&T-MediaOne Order*, 15 FCC Rcd. at 9821 ¶ 10 (emphasis added); *see also* *Bell Atlantic-NYNEX Order*, 12 FCC Rcd. at 20035 ¶ 95.

¹⁶ *AT&T-MediaOne Order*, 15 FCC Rcd at 9821 ¶ 10.

Transaction would “affect the quality and diversity of communications services, or will result in the provision of new or additional services to customers.”¹⁷

C. Burden of Persuasion and Affirmative Finding of Competitive Benefits

Applicants bear the burden of proving, by a preponderance of the evidence, that the proposed Transaction serves the public interest.¹⁸ The Applicants must demonstrate that the competitive harms that could result from the proposed Transaction are outweighed by the claimed benefits.¹⁹ Those benefits must be: 1) transaction specific—likely to occur as a result of the transaction but unlikely to be realized by other practical means having fewer anticompetitive effects²⁰; 2) verifiable—both in likelihood and magnitude²¹; and 3) for the benefit of consumers, and not solely for the benefit of the company.²²

¹⁷ *Id.* at 9821-22 ¶¶ 10, 11.

¹⁸ *See Comcast-NBCU Order*, 26 FCC Rcd. at 4247 ¶ 22; *Sirius-XM Order*, 23 FCC Rcd. at 12364, ¶ 30, *Liberty Media-DIRECTV Order*, 23 FCC Rcd. at 3277 ¶ 22; *SBC-AT&T Order*, 20 FCC Rcd. at 18300 ¶ 16; *Comcast-AT&T Order*, 17 FCC Rcd. at 23255 ¶ 26.

¹⁹ *See Applications of AT&T Inc. and Deutsche Telekom AG for Consent to Assign or Transfer Control of Licenses and Authorizations, Memorandum Opinion and Order*, 26 FCC Rcd. 16184, 16190 (2011) (“*AT&T-T-Mobile Order*”). *See also Sallet Blog* (“Fundamental is the fact that applicants have the burden of demonstrating on the public record that their proposed transaction is in the public interest.”).

²⁰ *See Bell Atlantic-NYNEX Order*, 12 FCC Rcd. at 20063 ¶ 158 (“Efficiencies that can be achieved through means less harmful to competition than the proposed merger . . . cannot be considered to be true pro-competitive benefits of the merger.”); *see also AT&T-T-Mobile Order*, 26 FCC Rcd. at 16247-48 ¶¶ 124-28.

²¹ *See Comcast-NBCU Order*, 26 FCC Rcd. at 4330-31 ¶ 226 (“The Applicants . . . are required to provide sufficient supporting evidence to permit us to verify the likelihood and magnitude of each claimed benefit. Benefits expected to occur only in the distant future are inherently more speculative than more immediate benefits.”); *see also Liberty Media-DIRECTV Order*, 23 FCC Rcd. at 3330-31 ¶ 140.

²² *Comcast-NBCU Order*, 26 FCC Rcd. at 4330-31 ¶ 226; *see also Application of Western Wireless Corp. and ALLTEL Corp. for Consent to Transfer Control of Licenses and Authorizations, Memorandum Opinion and Order*, 20 FCC Rcd. 13053, 13100 ¶ 132 (2005).

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The Commission calculates these claimed benefits and the net cost of achieving them on a “sliding scale,” requiring a heightened showing where, as here, the potential harms are both substantial and likely.²³ If the Commission is unable to find that the alleged benefits outweigh the harms, or if there remain substantial and material questions of fact outstanding, the Commission must designate the application for a hearing.²⁴

Applicants do not satisfy their burden of proof. The public interest benefits they claim are unlikely and speculative, and they do not outweigh the anticompetitive effects of the Transaction. If approved, the Transaction as proposed is likely to inflict serious harm on edge providers due to consolidation in the market for national high-speed broadband distribution of edge provider content, which, in turn, would diminish competition in the broader video programming distribution market.

III. RELEVANT MARKETS

Applicants identify six distinct relevant markets for this Transaction,²⁵ but they fail to identify arguably the most important one: the national market for high-speed broadband

²³ See *Comcast-NBCU Order*, 23 FCC Rcd. at 4331 ¶ 227; *AT&T-T-Mobile Order*, 26 FCC Rcd. at 16247-48 ¶ 127 and n.362 (citing *Horizontal Merger Guidelines* § 10) (observing that “[c]ourts have generally found proof of efficiencies to be inadequate to rebut a finding of likely competitive harm.”); see also *Liberty Media-DIRECTV Order*, 23 FCC Rcd. at 3330-31 ¶ 141; *SBC-Ameritech Order*, 14 FCC Rcd. at 14825 ¶ 256.

²⁴ 47 U.S.C. § 309(e); see also *Citizens for Jazz on WRVR, Inc. v. FCC*, 775 F.2d 392, 394 (D.C. Cir. 1985) (“[W]hether or not an evidentiary hearing is held, the Commission must make the ultimate determination of whether the facts establish that the ‘public interest, convenience, and necessity will be served by the granting [of the application].’”).

²⁵ Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, *Applications and Public Interest Statement*, MB Docket No. 14-57, at 130 (filed Apr. 8, 2014) (“*Applications, Public Interest Statement*”).

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distribution of edge provider content.²⁶ The Department of Justice (“DOJ”) recognized and relied upon this market definition in the *AT&T-MediaOne* transaction, which was approved by the DOJ and the Commission only after a substantial divestiture and other conditions addressing the competitive concerns raised by the transaction.²⁷ Just as in *AT&T-MediaOne*, this Transaction would result in significant broadband consolidation at a national level.²⁸ By one calculation, the combined entity would control broadband access to nearly half of the country’s true high-speed, high-capacity broadband households²⁹ when slower connections such as traditional DSL, mobile wireless, and satellite broadband are excluded from the calculation, and the combined entity would pass almost two-thirds of U.S. households, or about 81 million homes.³⁰

Applicants argue that local market share is “the only geographic market of any relevance to the core services at issue here”³¹ because each company serves “distinct geographic areas” and

²⁶ See *AT&T-MediaOne Order*, 15 FCC Rcd. at 9819-21 ¶¶ 5-13.

²⁷ *Id.* at 9871 ¶ 123; Final Judgment, *United States v. AT&T*, No. 1:00-cv-01176 (D.D.C. Sept. 27, 2000) (“*AT&T-MediaOne Final Judgment*”).

²⁸ *AT&T-MediaOne Order*, 15 FCC Rcd. at 9833 ¶ 31.

²⁹ See Mark Cooper, *Buyer and Bottleneck Market Power Make Comcast-Time Warner Merger “Unapprovable”*, Consumer Federation of America 6 (2014), available at <http://consumerfed.org/pdfs/CFA-Comcast-TW-Merger-Analysis.pdf> (calculating that the dominant firm share will be 49 percent of all cable modem service, Verizon FiOS and AT&T U-Verse households).

³⁰ National Broadband Map, About Provider – Nationwide, <http://www.broadbandmap.gov/about-provider/comcast-corporation/nationwide/> (last visited Aug. 23, 2014).

³¹ See *Applications, Public Interest Statement* at 138 (“The FCC’s standard for whether two providers of broadband, video, or voice compete is whether they offer service to the same customers—the same standard reflected in the DOJ’s and FTC’s Horizontal Merger Guidelines. Consistent with this standard, [], the Commission has concluded that the relevant market for each of these services is local.”).

“competes in its respective footprint.”³² This narrow focus ignores the Transaction’s serious competitive implications for edge providers and the video programming distribution market. Today, each cable provider faces competitive pressure in its respective local markets from online video. To be a viable competitor, however, OVDs require national distribution of their video content at sufficient speeds that only high-speed broadband can offer. With its expanded national footprint, the combined entity can more easily manipulate access to its high-speed broadband service than can each company standing alone, thereby harming OVDs and diminishing competition in the online video market.

A. National High-Speed Broadband Distribution of Edge Provider Content

1. Product Market: High-Speed Distribution of Edge Provider Content

The product market definitions proffered by the Applicants sidestep a key issue: that high-speed broadband Internet access to American households is a *necessary* input for the distribution of edge provider content.³³ Consumers rely upon their ISPs, like Comcast and TWC,

³² See *Applications, Public Interest Statement* at 1; see also *The Impact of the Comcast-Time Warner Cable Merger on American Consumers: Hearing Before the S. Comm. On the Judiciary*, 113th Cong. 3 (April 9, 2014) (joint written statement of David L. Cohen, Executive Vice President, Comcast Corporation, and Arthur T. Minson, Executive Vice President & Chief Financial Officer, Time Warner Cable Inc.) (“Comcast and TWC *do not compete for customers in any market*—either for broadband, video, or voice services Comcast and TWC serve separate and distinct geographic areas.”) (emphasis in original).

³³ Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, *Fifteenth Report*, 28 FCC Rcd. 10496, 10619 ¶ 249, 10620 ¶ 254 (2013) (“*Fifteenth Video Competition Report*”). The Department of Justice has challenged transactions that threatened to give one entity control over crucial inputs. See Complaint, *United States v. WorldCom, Inc. and Sprint Corp.*, No. 1:00-cv-00368, at 13 (June 26, 2000) (“*DOJ WorldCom/Sprint Complaint*”) (bringing action to enjoin WorldCom, Inc.’s acquisition of Sprint Corporation because it would give the combined entity an even greater “commanding position” in the control of backbone networks for which “[t]here are no substitutes for this connectivity sufficiently close to defeat a small but significant nontransitory price increase”). The Commission has similarly conditioned its approval of transactions that allowed an entity to withhold a “critical input.” See, e.g., *Applications of AT&T Inc. and BellSouth Corp.* For

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to provide them access to all points of the Internet. For consumers to enjoy online video and other content, edge providers, like Netflix, need unfettered access to broadband—at sufficient speeds—to distribute that content.³⁴ As the Commission has recognized “OVDs require [high-speed] Internet capacity to transmit their programming, and consumers need sufficient broadband to access OVDs’ content.”³⁵

Edge providers cannot distribute media-rich content without full access to broadband customers, and high-speed broadband providers have a terminating access monopoly: if an edge provider wants to reach a high-speed broadband ISP’s subscribers, it must have access to the ISP’s network. The Commission recently analyzed this phenomenon in the Open Internet proceeding, and the D.C. Circuit affirmed the Commission’s analysis.³⁶ In the Commission’s words, “broadband providers have the ability to act as gatekeepers,” because a subscriber’s ISP “is typically an edge provider’s *only* option for reaching a particular end user,” and the

Transfer of Control, *Memorandum Opinion and Order*, 22 FCC Rcd. 5662 (2007); *SBC-AT&T Order*, 20 FCC Rcd. at 18292-93 ¶ 3; Verizon Commc’ns Inc. and MCI, Inc., Applications for Approval of Transfer of Control, *Memorandum Opinion and Order*, 20 FCC Rcd. 18433 (2005).

³⁴ See, e.g., Competitive Impact Statement, *United States v. Comcast Corp., General Electric Co. and NBC Universal, Inc.*, No. 1:00-cv-00106, at 4 (D.D.C. Jan. 18, 2011) (“Unlike MVPDs, OVDs do not own distribution facilities and are dependent upon ISPs for the delivery of their content to viewers.”); *Fifteenth Video Competition Report*, 28 FCC Rcd. at 10620 ¶ 254 (“Access to high-speed data pipelines capable of delivering a high-quality video signal is critical for OVD entrants”).

³⁵ *Fifteenth Video Competition Report*, 28 FCC Rcd. at 10620 ¶ 254.

³⁶ See *Verizon v. FCC*, 740 F.3d 623, 646 (2014) (citing Preserving the Open Internet, *Report and Order*, 25 FCC Rcd. 17905, 17919 ¶ 24 n.66 (2010) (“*Preserving the Open Internet Order*”)) (“The Commission also convincingly detailed how broadband providers’ position in the market gives them the economic power to restrict edge-provider traffic and charge for the services they furnish edge providers.”).

broadband provider is “capable of blocking, degrading, or favoring any Internet traffic that flows to or from a particular subscriber.”³⁷

Applicants offer an overbroad definition of high-speed broadband, which includes DSL. They also argue that they would continue to face substantial competition in the provision of high-speed Internet from mobile wireless and satellite broadband, among other services.³⁸ But DSL, mobile wireless, and satellite broadband Internet access are not viable alternatives to high-speed cable broadband for edge providers seeking to deliver high-quality video to consumers. In addition, while Netflix has engineered its service to work on DSL systems in standard definition, DSL does not provide enough bandwidth to deliver higher quality video content or work when multiple devices in a household are connected. Nor is DSL likely to be able to provide that functionality in the near future, if ever.

In today’s marketplace, content-rich edge services increasingly require a consistently robust high-speed broadband connection that DSL, mobile wireless, and satellite broadband simply cannot provide. The Commission recently recognized that “consumers increasingly use VoIP, social networking, video conferencing, and streaming video over their broadband connection.”³⁹ The Commission proposed an increase in the minimum speed required for broadband services identified in Section 706 from the 4 Mbps/1 Mbps to 10 Mbps/2Mbps.⁴⁰

³⁷ *Preserving the Open Internet Order*, 25 FCC Rcd. at 17919 ¶ 24, 17935 ¶ 50 (emphasis added).

³⁸ *Applications, Public Interest Statement* at 158.

³⁹ Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, *Tenth Broadband Progress Notice of Inquiry*, GN Docket No. 14-126, 4-5 ¶ 6 (2014) (“*Tenth Broadband Progress NOI*”). The Government Accountability Office similarly recognized that “the federal benchmark allows for such Internet

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The Commission's proposal is conservative. Households increasingly use multiple Internet-connected devices simultaneously to connect to increasingly bandwidth-intensive services⁴¹ such as the streaming of audio and video content, interactive video games, and video conferencing services. As a result, they require even more bandwidth than would be required for the use of a single device or application. The Commission acknowledges that "network capacity would likely need to exceed [10 Mbps] to fully utilize these services and applications without substantial buffering, packet loss, and delay."⁴²

For that reason, most ISPs, including Applicants, recommend speeds greater than 10 Mbps for seamless streaming of video or Internet gaming—and even more for homes with more than one Internet-connected device.⁴³ TWC, for example, suggested at least 20 Mbps if you want to "stream video," 30 Mbps for gaming, and 50 Mbps "if you have multiple people on multiple devices in your home."⁴⁴ TWC advertised its 3 Mbps package as sufficient only to

applications as accessing websites, emailing with attachments like pictures, and simple video conferencing, but does not support some of the new Internet applications that require faster speeds to use . . . such as distance learning, telecommuting, and telemedicine." U.S. Gov. Accountability Office, GAO-14-409, Telecommunications: Projects and Policies Related to Deploying Broadband in Unserved and Underserved Areas 4-5 (2014) ("GAO Deploying Broadband Report").

⁴⁰ *Id.*

⁴¹ *Tenth Broadband Progress NOI* at 4 ¶ 10 ("[M]embers of a household routinely use multiple broadband devices and sometimes do so simultaneously.").

⁴² *Id.* at 7 ¶ 12.

⁴³ See, e.g., AT&T, AT&T High-Speed Internet Plans – Comparison, <http://www.att-services.net/att-high-speed-internet-comparison.html#.U-J1ePldV8E> (last visited Aug. 23, 2014) (recommending packages offering speeds of 12 Mbps and up for customers who stream video clips and engage in teleconferencing, and speeds of 18 Mbps and up for customers who stream full-length videos and play interactive online games).

⁴⁴ Time Warner Cable, High Speed Internet Plans and Packages, *available at* <http://www.timewarnercable.com/en/internet/internet-service-plans.html> (last visited Aug. 16, 2014).

“[s]urf the web, connect with friends and family through Facebook, send email, and download medium-sized files.”⁴⁵

Figure 1: Screenshot of TWC Internet Offerings

Ultimate	Up to 50Mbps Home WiFi, TWC WiFi® Hotspots Upload up to 5Mbps	<ul style="list-style-type: none"> Great if you have multiple people on multiple devices in your home ONLINE ONLY PRICE: Save \$5/mo (was \$69.99)
Extreme	Up to 30Mbps Home WiFi, TWC WiFi® Hotspots Upload up to 5Mbps	<ul style="list-style-type: none"> Great for extreme gamers ONLINE ONLY PRICE: Save \$5/mo (was \$59.99)
Turbo	Up to 20Mbps TWC WiFi® Hotspots Upload up to 2Mbps	<ul style="list-style-type: none"> Great if you stream video or email large files ONLINE ONLY PRICE: Save \$5/mo (was \$49.99)
Standard	Up to 15Mbps TWC WiFi® Hotspots Upload up to 1Mbps	<ul style="list-style-type: none"> Great for sharing photos and downloading music ONLINE ONLY PRICE: Save \$5/mo (was \$39.99)

Comcast advised customers that they likely will need even more bandwidth—recommending 50 Mbps for “downloading, streaming and sharing—all at the same time” and 105 Mbps for “households with multiple computers or devices.”⁴⁶ Its 25 Mbps offering is more appropriate if you want to only “[s]hare photos, book travel, and watch the latest viral video craze.”⁴⁷ Both Comcast’s and TWC’s advertisements make clear that consumers need more than a 3 Mbps connection for rich content.

⁴⁵ *Id.*

⁴⁶ See Comcast, New Customer Offers in Washington, DC, <http://www.comcast.com/shop/deals-dealfinder> (last visited Aug. 16, 2014).

⁴⁷ *Id.*

Figure 2: Screenshot of Comcast Internet Offering

The screenshot displays two Comcast internet service packages. The top package is 'Extreme 105' with a speed of 105 Mbps, priced at \$114.95/month. It includes features like Constant Guard, XFINITY Connect, and access to 1 million WiFi hotspots. The bottom package is 'Blast 50' with a speed of 50 Mbps, priced at \$34.99/month for the first 12 months. It also includes Constant Guard, XFINITY Connect, and access to millions of WiFi hotspots. Both packages have an 'Add To Cart' button and a link to 'Details and Restrictions'.

Extreme 105
105 Mbps
\$114.95/mo
Add To Cart
Details and Restrictions

Package Details:
Get download speeds up to 105 Mbps and upload speeds up to 20 Mbps!

- Perfect for hard-core gamers, households with multiple computers or devices and downloading large multi-media files.
- XFINITY WiFi—Stay connected at over 500,000 XFINITY WiFi and CableWiFi hotspots at no extra cost.
- Constant Guard®—The most comprehensive online protection of any major Internet provider at home and now on your mobile devices.
- XFINITY Connect with 7 e-mail accounts, each with 10GB of storage.
- Backed by the 30-Day Money-Back Comcast Customer Guarantee.

This special price is for customers who currently aren't subscribed to any XFINITY services.

Blast®
50 Mbps
\$34.99/mo for the first 12 months
Add To Cart
Details and Restrictions

Package Details:
Get download speeds up to 50 Mbps and upload up to 10 Mbps!

- Connect your devices and do more of what you love online with reliable Internet speeds for your home.
- Connect your household to blazing fast speeds for downloading, streaming and sharing—all at the same time.
- XFINITY Connect with 7 e-mail accounts, each with 10GB of storage.
- Constant Guard®—The most comprehensive online protection of any major Internet provider at home and now on your mobile devices.
- XFINITY WiFi—Stay connected at millions of XFINITY WiFi and CableWiFi hotspots at no extra cost.
- Backed by the 30-Day Money-Back Comcast Customer Guarantee™.

This special price is for customers who currently do not subscribe to any XFINITY services.

These recommendations fall in line with those of OVDs. Netflix recommends at least 5 Mbps per streaming device for 720p video, 7 Mbps for 1080p, and 25 Mbps per streaming device for Ultra 4K HD video.⁴⁸ Apple TV recommends 6 Mbps for 720p and 8 Mbps for 1080p video.⁴⁹ Other applications such as streaming video conferencing among multiple users similarly

⁴⁸ Netflix, Internet Connection Speed Recommendations, <https://help.netflix.com/en/node/306> (last visited Aug. 23, 2014); Mike Flacy, *Netflix Makes 1080p Super HD Streams Available to All Users*, Digital Trends (Sep. 27, 2013), <http://www.digitaltrends.com/home-theater/netflix-makes-1080p-super-hd-streams-available-to-all-users/#!bFdkOu>.

⁴⁹ *Apple TV (2nd and 3rd generation): Troubleshooting Playback Performance*, Apple, <http://support.apple.com/kb/TS3623> (last visited Aug. 23, 2014).

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requires speeds of at least 10 Mbps and streaming videos or presentations requires at least 25 Mbps for selected applications.⁵⁰ A family of four, for example, quickly could find its bandwidth needs exceeding the 3 Mbps mark by a factor of 10 or more as multiple people watch separate HD video streams while simultaneously surfing the web, gaming online, or posting comments about the shows they are streaming.

Although Netflix has worked very hard to create a streaming-video application that can adapt to challenging broadband conditions, higher-quality video requires higher bandwidth connections. Today's consumers increasingly demand high-quality video. MVPDs consistently market HD-quality video services and OVDs must do the same to remain competitive and to continue to grow as an alternative and innovative video-delivery platform.⁵¹

For these reasons, to properly assess whether the Transaction is in the public interest, the Commission must consider its effect on competition in the market for true high-speed, high-capacity Internet connections capable of supporting multiple streams of rich media and interactive content. In the near term, that market is likely defined as connections capable of sustaining at least 10 Mbps for individuals and at least 25 Mbps for households. Traditional DSL, mobile wireless, or satellite broadband are incapable of those speeds at present⁵² and are unlikely to keep pace with consumer demand for even greater speeds in the foreseeable future.

⁵⁰ *GAO Deploying Broadband Report* at 6, Fig. 1.

⁵¹ See, e.g., Tony Werner, *Comcast Debuts First Public U.S.-Based Delivery of 4K Ultra HD at NCTA 2013*, Comcast (June 11, 2013), <http://corporate.comcast.com/comcast-voices/comcast-debuts-first-public-u-s-based-delivery-of-4k-ultra-hd-at-ncta-2013>; Charter, Charter Spectrum TV, <https://www.charter.com/browse/tv-service/tv> (last visited Aug. 23, 2014) (advertising “[t]he most HD you can get; FREE HD; 200+ HD channels available”).

⁵² Applications for Consent to the Assignment and/or Transfer of Control of Licenses Adelphia Commc'ns Corp., to Time Warner Cable Inc., to Comcast Corp., Comcast Corp. to Time Warner Inc., Time Warner Inc. to Comcast Corp., *Memorandum Opinion and Order*, 21 FCC Rcd. 8203,

a. Traditional DSL Is an Increasingly Inadequate Substitute for the Distribution of Online Video Content

Citing to Commission decisions in *AOL-Time Warner* (2001) and *AT&T-Comcast* (2002),⁵³ the Applicants propose an overly broad Internet access services market that includes traditional DSL.⁵⁴ The Internet has changed significantly since then,⁵⁵ and the modern demand for rich content requires Internet speeds and capacity that traditional DSL simply does not—and cannot—attain.⁵⁶

These challenges are particularly apparent for customers seeking to watch long-form, streaming video in HD. As online video has grown in popularity, consumers have been voting with their feet—increasingly choosing cable broadband over DSL.⁵⁷ Cable providers like

8234 ¶ 59 (2006) (“*Adelphia Order*”) (“[C]ompetition depends on having choices among products that are close substitutes for one another.”).

⁵³ *Applications, Public Interest Statement* at 134 (citing *Applications for Consent to the Transfer of Control of Licenses and Section 214 Authorizations by Time Warner and America Online to AOL Time Warner, Memorandum Opinion and Order*, 16 FCC Rcd. 6547, 6568 ¶ 56 (2001); *Applications for Consent to the Transfer of Licenses from Comcast Corp. and AT&T Corp. to AT&T Comcast Corp., Memorandum Opinion and Order*, 17 FCC Rcd. 23246, 23296-97 ¶ 128 (2002)).

⁵⁴ Traditional DSL refers to sDSL or aDSL that is not a hybrid fiber-DSL product such as U-Verse capable of delivering MVPD services. *See* IHS Technology, *Broadband Internet Penetration Deepens in the US; Cable is King* (Dec. 9, 2013), <https://technology.ihs.com/468148/broadband-internet-penetration-deepens-in-us-cable-is-king> (“*IHS Technology*”).

⁵⁵ For example, in 2001 and 2002, when the Commission approved the *AOL/Time Warner* and *Comcast-AT&T*, OVDs had yet to enter the video marketplace, and the speed of an Internet connection was still commonly measured in “baud.”

⁵⁶ Mark Cooper, *Buyer and Bottleneck Market Power Make Comcast-Time Warner Merger “Unapprovable”*, Consumer Federation of America, 6 (2014), *available at* <http://consumerfed.org/pdfs/CFA-Comcast-TW-Merger-Analysis.pdf> (citing *Horizontal Merger Guidelines* at 8).

⁵⁷ Press Release, Leichtman Research Group, *About 385,000 Add Broadband in the Second Quarter of 2014* (Aug. 15, 2014), *available at* <http://www.leichtmanresearch.com/press/081514release.html> (reporting that the top cable companies accounted for 99 percent of net

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Comcast and TWC have been the primary beneficiaries of this shift away from traditional DSL, and there is no indication that this trend will subside. According to Comcast's own internal documents, from Q4 2010 to Q3 2013, Comcast's Internet penetration share of occupied households {{ }}, while DSL's penetration {{ }} over the same time period.⁵⁸ In 2013, Comcast's and TWC's new broadband subscribers alone represented nearly half of all new residential Internet subscriptions in the United States.⁵⁹ In the first quarter of 2014 alone, Comcast and Time Warner combined added a remarkable 666,000 new broadband customers.⁶⁰ By contrast, traditional DSL connections have steadily declined. In the past two years, traditional DSL offered by the vast majority of carriers across the country decreased by more

broadband additions for the quarter versus the top telephone companies: AT&T and Verizon added 627,000 U-verse and FiOS customers, and lost 636,000 DSL subscribers).

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⁵⁹ Press Release, Leichtman Research Group, 2.6 Million Added Broadband from Top Cable and Telephone Companies in 2013 (Mar. 17, 2013), *available at* <http://www.leichtmanresearch.com/press/031714release.pdf>.

⁶⁰ Leichtman Research Group, *Research Notes: Q2 2014*, at 7 (2014), *available at* http://www.leichtmanresearch.com/research/notes06_2014.pdf; *see also* Claire Atkinson, *Time Warner Cable, Comcast Report Banner Results*, NY Post (Apr. 25, 2014), <http://nypost.com/2014/04/25/time-warner-cable-comcast-report-banner-results/> (finding that together Comcast and Time Warner added 652,000 new customers in the first quarter of 2014).

than 10 million connections.⁶¹ AT&T and Verizon together lost more than 3 million traditional DSL subscribers in 2013 alone.⁶²

Applicants attempt to downplay this trend by citing misleading DSL growth statistics, stating that DSL growth from 2008 through 2012 averaged 25 percent annually.⁶³ The growth figures cited by Applicants are almost entirely attributable to new subscribers to AT&T's U-verse, which uses a hybrid fiber/copper technology.⁶⁴ AT&T's U-verse offers a far closer—yet still imperfect—alternative to pure fiber and cable broadband than traditional DSL, and should not be included in the same category as other DSL services to artificially bolster the growth of traditional DSL. In the first quarter of 2014, AT&T and Verizon added 732,000 new subscribers to their U-verse and FiOS products, while sustaining a net loss of 638,000 DSL subscribers, and

⁶¹ Internet Access Services: Status as of June 2013, Federal Communications Commission: Industry Analysis and Technology Division, Wireline Competition Bureau 23, 25, Tables 5, 7 (Jun. 2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0625/DOC-327829A1.pdf (“2014 Internet Access Services Report”).

⁶² Steve Donohue, *Comcast Dominates 2013 Broadband Subscriber Growth Rankings*, FierceCable (Mar. 17, 2014), <http://www.fiercecable.com/story/comcast-dominates-2013-broadband-subscriber-growth-rankings/2014-03-17>; Todd Shields, *AT&T Starts Bid to Abandon Copper Wire with Tests in Towns*, NorthJersey.com (Mar. 2, 2014), <http://www.northjersey.com/news/at-digital-only-phone-service-in-2-areas-1.735979> (reporting that more than 70 percent of AT&T's residential customers dropped their DSL service).

⁶³ *Applications, Public Interest Statement* at 48; *At a Tipping Point: Consumer Choice, Consolidation and the Future Video Marketplace, Hearing Before the S. Comm. On Commerce, Science, & Transportation*, 113th Cong. 7 (written statement of David L. Cohen, Executive Vice President, Comcast Corporation) (“Video Marketplace Hearing”).

⁶⁴ *2014 Internet Access Service Report* at 25, Table 7. DSL connections may have climbed to more than 16 million in 2013, but these connections are based substantially on consumers upgrading their broadband to U-verse. *Id.* AT&T had approximately 5 million U-verse TV locations when the FCC compiled its data. Jim Barthold, *AT&T U-verse IPTV Gains More Subscribers than Broadband in Q1*, FierceCable (April 25, 2013), <http://www.fiercecable.com/story/att-u-verse-iptv-gains-more-subscribers-broadband-q1/2013-04-25>.

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a net loss of 636,000 DSL subscribers the next quarter.⁶⁵ Cable broadband still leads in new subscriber growth, with the top cable broadband providers adding close to 1,000,000 subscribers in that same period.⁶⁶

AT&T and Verizon appear to have conceded defeat given their plans to further shrink their DSL footprints. In rural areas, Verizon plans to retire the copper loops that support its traditional DSL service: “[W]e have got LTE built that will handle all of those services and so we are going to cut the copper off there. We are going to do it over wireless.”⁶⁷ AT&T announced a similar plan to retire its copper networks and start trials for digital-only telephone service. AT&T’s plan to offer IP-only service means that only some of the areas currently reliant on DSL services will be upgraded to U-verse, while about 25 percent of its customer territory will be offered only wireless LTE broadband.⁶⁸ Some estimates indicate that Verizon and AT&T will leave as many 47 and 57 percent of their customers, respectively, without a wired broadband option from the carriers.⁶⁹

⁶⁵ Press Release, Leichtman Research Group, Nearly 1.2 Million Add Broadband in the First Quarter of 2014 (May 20, 2014), <http://www.leichtmanresearch.com/press/052014release.html>; Press Release, Leichtman Research Group, About 385,000 Add Broadband in the Second Quarter of 2014 (Aug. 15, 2014), <http://www.leichtmanresearch.com/press/081514release.html>.

⁶⁶ *Id.*

⁶⁷ Bruce Kushnick, *Are You in a Verizon or AT&T Shut Off Zone? Will You Be One of the Disconnected?*, Huffingtonpost.com (Aug. 13, 2013), http://www.huffingtonpost.com/bruce-kushnick/are-you-in-a-verizon-or-a_b_3737177.html (citing Edited Transcript: VZ – Verizon at Guggenheim Securities Symposium (June 21, 2012), *available at* http://www.media-alliance.org/downloads/Verizon_Kill_Copper.pdf).

⁶⁸ *AT&T to Invest \$14 Billion to Significantly Expand Wireless and Wireline Broadband Networks, Support Future IP Data Growth and New Services*, AT&T (Nov. 7, 2012), <http://www.att.com/gen/press-room?pid=23506&cdvn=news&newsarticleid=35661>.

⁶⁹ Bruce Kushnick, *Are You in a Verizon or AT&T Shut Off Zone? Will You Be One of the Disconnected?*, Huffingtonpost.com (Aug. 13, 2013), http://www.huffingtonpost.com/bruce-kushnick/are-you-in-a-verizon-or-a_b_3737177.html.

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Thus, experts predict that approximately 70 percent of all wired Internet access subscribers in America will be cable customers by the end of 2015 (as opposed to 50 percent today).⁷⁰ This does not speak well of DSL's current ability to compete against Comcast's or TWC's current offerings, let alone against the combined entity's future DOCSIS 3.1 offerings. Therefore the Commission should not consider traditional DSL as a competitor to Applicants' cable broadband offerings for true high-speed broadband capable of distributing online video content.

b. Mobile Wireless and Satellite Broadband are Not Viable Substitutes for the Distribution of Online Video Content

Applicants assert that the combined entity would face "substantial competition" in the provision of broadband services from mobile wireless and satellite broadband.⁷¹ But neither of these technologies is an adequate substitute for cable broadband, particularly for the distribution of online video, and for similar reasons.

Mobile wireless broadband "generally lacks the ability to deliver large quantities of high quality video,"⁷² and often carries with it significant usage and data cap restrictions that cause consumers to significantly ration its use.⁷³ As the DOJ has stated, "[w]ireless may be a very

⁷⁰ SUSAN CRAWFORD, CAPTIVE AUDIENCE 65 (2013) (citing Robert C. Atkinson et al, Broadband in America—2nd Ed.: Where It Is and Where It Is Going (According to Broadband Providers): An Update of the 2009 Report Originally Prepared for the Staff of the FCC's Omnibus Broadband Initiative 69 (May 2011), *available at* http://www4.gsb.columbia.edu/null/download?exclusive=filemgr.download&file_id=738763).

⁷¹ *Applications, Public Interest Statement* at 158.

⁷² See Mark Cooper, *Buyer and Bottleneck Market Power Make Comcast-Time Warner Merger "Unapprovable"*, Consumer Federation of America, at 6 (2014), *available at* <http://consumerfed.org/pdfs/CFA-Comcast-TW-Merger-Analysis.pdf>.

⁷³ See AT&T, Data & Internet Services, <http://www.att.com/shop/wireless/services/data-internet.html> (last visited Aug. 23, 2014) (offering a \$60.00 per month plan with a

attractive alternative [to wired connections] for consumers who greatly value mobility and for consumers who do not place that much value on the highest speeds (e.g., consumers who do not want advanced services, such as HD video streaming).”⁷⁴ {{

}} despite the fact that the majority of consumers have Internet connections with their smart mobile phones.⁷⁵

Even Comcast’s Executive Vice President, David Cohen does not “believe wireless is a perfect substitute for wireline.”⁷⁶ Verizon Wireless CEO, Dan Mead, also has sought to temper expectations for wireless LTE, calling its ability to compete with cable “a little bit of a stretch.”⁷⁷ The lack of substitutability between mobile wireless and cable broadband may be one reason that Comcast and Verizon Wireless are willing to cross-sell each other’s services.⁷⁸

10 GB data cap); Verizon, 4GLTE: LTE Internet Installed, <http://www.verizonwireless.com/b2c/lte-internet-installed/> (last visited Aug. 23, 2014) (similar).

⁷⁴ Economic Issues in Broadband Competition A National Broadband Plan for Our Future, *Ex Parte Submission of the U.S. Department of Justice*, GN Docket No. 09-51, at 8 (Jan. 4, 2010).

⁷⁵ David S. Evans, Economic Analysis of the Impact of the Comcast-Time Warner Cable Transaction on Internet Access to Online Video Distributors ¶ 47 (Aug. 25, 2014) (“*Evans Decl.*”).

⁷⁶ *Video Marketplace Hearing* (oral statement of David L. Cohen, Executive Vice President, Comcast Corporation).

⁷⁷ Chris Ziegler, *Comcast's Claim That LTE Competes With Cable Modems Is “A Little Bit Of A Stretch,” Says Verizon Wireless CEO*, The Verge (Aug. 4, 2014), <http://mobile.theverge.com/2014/8/4/5968545/comcasts-claim-that-lte-competes-with-cable-modems-is-a-little-bit-of-a-stretch>.

⁷⁸ Nathan Ingraham, *Verizon Pulls Plug On Joint Venture With Cable Companies But Cross-Promotion Will Continue*, The Verge (October 17, 2013), <http://www.theverge.com/2013/10/17/4849254/verizon-pulls-plug-on-joint-venture-with-cable-companies> (“A Verizon spokesperson told us that ‘the commercial agreements with the cable companies remain in place. The companies will continue to offer each other’s products and services in various distribution channels.’”).

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Likewise, for consumers seeking access to high-quality online video, satellite broadband is an inadequate substitute for cable broadband for several reasons. First, as the Commission has recognized, satellite facilities have impairments that “limit[] their competitiveness with other broadband services,” including limited bandwidth, reduced speeds, and greater latency as compared to terrestrial broadband.⁷⁹ Moreover, the Commission has found that satellite-based broadband providers “face technical challenges such as antenna size, weight, and ability to track satellites in motion.”⁸⁰ Finally, satellite providers typically have low data caps (10-40 GB), and charge higher prices on an Mbps-basis as compared to cable broadband,⁸¹ which further limits their competitiveness with cable broadband services.⁸²

⁷⁹ “Terrestrial-based broadband service providers typically price by service speed, with some ISPs imposing data caps or some other form of consumption-based pricing. In contrast, [satellite providers] offer[] a single service speed, but provide[] service tiers in the form of different data caps: 10 GB, 15 GB or 25 GB per month with unmetered downloads permitted between midnight and 5:00 a.m. local time.” *2014 Measuring Broadband America Report* at 18.

⁸⁰ *Fifteenth Video Competition Report*, 28 FCC Rcd. at 10679 ¶ 371.

⁸¹ For example, HughesNet offers plans at speeds of 5 Mbps for \$49.99, 10 Mbps from \$59.99 to 79.99, and 15 Mbps for \$129.99. HughesNet, Gen4: Internet, <http://www.hughesnet.com/index.cfm?page=Plans-Pricing> (last visited Aug. 23, 2014).

⁸² *2014 Measuring Broadband America Report*, at 18 (2014); *see also* DishNET Satellite—Need to Know and FAQs (“Q: The Internet provider at my current location is cable/fiber (FiOS, U-Verse, Comcast, Time Warner, Charter, Cox, AT&T or Verizon). Is dishNET Satellite a good solution for me? A: NO, As a satellite-based service, dishNET Satellite Internet has monthly data allowance limits which are much lower than cable and fiber-based Internet providers. Additionally, with satellite-based systems signal latency (delay) occurs, which may negatively affect some activities such as realtime gaming and VoIP.”) *See* DISH, <http://www.dish.com/entertainment/internet-phone/satellite-internet/> (last visited Aug. 24 2014).

2. Geographic Market: National

The market for broadband access may be local, but the market for content distribution over broadband is decidedly national. In this respect, the combined entity's increased scale would directly impact edge providers that require *national distribution*.⁸³

In addition to established edge providers such as Netflix, Amazon Prime Video, Google, Apple, and Electronic Arts, there are a number of nascent edge providers such as Vimeo, Veoh, and Twitch.tv that have entered the market and are trying to get a toehold in the video marketplace. All of these edge providers—whether established providers or fledgling entrants—require national distribution (anywhere that Internet access is available) at sufficient speeds to compete with incumbent services and invest in new and innovative offerings.⁸⁴

In evaluating prior transactions, the Commission has considered similar issues in which merely examining competitive effects in local markets failed to capture the transaction's competitive implications in more broadly defined geographic markets. For example, the Commission considered issues similar to those presented by the proposed Transaction in its analysis in *AT&T-MediaOne*.⁸⁵

⁸³ See Mark Cooper, *Buyer and Bottleneck Market Power Make Comcast-Time Warner Merger "Unapprovable"*, Consumer Federation of America, at 6 (2014), available at <http://consumerfed.org/pdfs/CFA-Comcast-TW-Merger-Analysis.pdf> (calculating that the dominant firm share will be 49 percent of the true broadband market). Applicants estimate that their combined customers will represent approximately from 20 to less than 40 percent of the nation's broadband customers. *Applications, Public Interest Statement* at 158.

⁸⁴ *Fifteenth Video Competition Report*, 28 FCC Rcd. at 10607 ¶ 220 (“[A]n OVD's geographic market generally covers all regions capable of receiving high-speed Internet service.”).

⁸⁵ See *AT&T-MediaOne Order*. In *AT&T-MediaOne*, AT&T—a large cable system operator—sought to acquire MediaOne, another large cable operator. AT&T was one of three cable owners (along with Comcast and Cox) of Excite@Home, then the largest residential broadband service provider in the country. Excite@Home had exclusive rights to provide residential broadband services over the systems of its three cable owners. At the time, AT&T owned a majority of the

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As a result of its acquisition of MediaOne, AT&T would have owned substantial interests in both Excite@Home and RoadRunner, the two largest cable ISPs and distributors of broadband content and services.⁸⁶ Together the two companies accounted for approximately 40 percent of residential broadband subscribers and had last-mile facilities reaching nearly 63 percent of homes passed by cable nationwide⁸⁷—numbers strikingly similar to this Transaction.

The DOJ eventually blocked AT&T's acquisition of a substantial share in RoadRunner, finding that it likely would have resulted in anticompetitive harm in the national market for broadband content distribution.⁸⁸ Importantly, the DOJ did not address—or even discuss—any actual or potential competition between Excite@Home and RoadRunner for the provision of broadband service to cable operators. Nor did the DOJ's complaint allege competitive overlaps between Excite@Home and RoadRunner with respect to end users in particular local residential broadband markets.

Rather, the DOJ's competitive concerns focused solely on the increased market power that AT&T would be able to exercise post-merger in a national market for broadband content distribution, and over those firms whose services required broadband-level speeds, such as the

voting interest in Excite@Home. MediaOne owned a roughly one-third interest in RoadRunner, then the second largest residential broadband service provider after Excite@Home. Like Excite@Home, RoadRunner had exclusive rights to provide broadband over the systems of its two cable parents, MediaOne and Time Warner.

⁸⁶ *AT&T-MediaOne Order*, 15 FCC. at 9864-65 ¶ 110.

⁸⁷ *Id.* at 9833 ¶ 31, 9865 ¶ 110.

⁸⁸ *See* Competitive Impact Statement, *United States v. AT&T*, No. 1:00-cv-01176, at 9 (D.D.C. Sept. 27, 2000) (“A relevant product market affected by this transaction is the market for aggregation, promotion, and distribution of broadband content and services.”).

delivery of high-quality streaming video to consumers.⁸⁹ In particular, the DOJ's complaint emphasized that AT&T would have increased market power over broadband content providers "with national distribution in mind, largely in order to maximize the potential number of consumers they will reach."⁹⁰

Today, edge providers—such as OVDs—enter the market with national distribution in mind. The revenue that can be earned by an OVD depends upon the number of consumers that it can access. Whether an OVD is subscription-based or ad-supported, most of its revenue opportunities are proportional to the increased number of consumers who access its online video content.⁹¹ OVDs require national distribution in order to maximize the potential number of consumers they can reach, thereby maximizing their revenue opportunities. Regardless of the local markets in which Comcast and TWC provide residential broadband service, the fact remains that any edge provider that requires national distribution would have to deal with the combined company. And the Transaction gives the combined company significantly larger scale in provisioning broadband connections on which edge providers rely. Therefore, focusing on Applicants' existing local markets significantly underestimates the expansive national reach the combined company would have and, as explained further below, fails to take into account the Transaction's likely anticompetitive effects in the market for the national high-speed broadband

⁸⁹ Complaint, *United States v. AT&T*, No. 1:00-cv-01176, at 8 ¶ 22 (D.D.C. May 25, 2000) ("*AT&T-MediaOne Complaint*").

⁹⁰ *AT&T-MediaOne Complaint* at 9 ¶ 23.

⁹¹ Evans Decl. ¶ 127.

distribution of edge provider content, a market recognized and relied upon by the DOJ in *AT&T-MediaOne*.⁹²

B. Video Programming Distribution

The Commission also must weigh the Transaction's impact on current and future competition in the video programming distribution market, including its potential effects on MVPDs and OVDs. As the Commission accurately foresaw in *Comcast-NBCU*,⁹³ the video programming distribution market continues to expand as OVDs increasingly offer services that, while not necessarily complete substitutes,⁹⁴ compete with MVPDs' offerings (e.g., linear programming, video-on-demand). While OVDs differ from MVPDs, particularly in regard to their dependence on ISPs like Comcast and TWC to reach their customers, MVPDs—including Comcast—consider OVDs competitors. Indeed, the Commission already has recognized that “OVDs pose a potential competitive threat to Comcast's MVPD service.”⁹⁵ As the DOJ has

⁹² In the Commission's consideration of the AT&T-MediaOne merger, it approved the transaction only because the applicants committed to ensuring that unaffiliated ISPs would be able to access the merged firm's cable network, and the DOJ-imposed conditions, including divestiture of AT&T's interest in RoadRunner, mitigated the combined firm's “ability and the incentive to discriminate against unaffiliated content providers.” *AT&T-MediaOne Order*, 15 FCC Rcd. at 9864 ¶ 109. Here, however, there is no such divestiture, competition, or assurance. The concerns that led the DOJ to analyze the AT&T-MediaOne merger's effect on competition in the market for the national high-speed broadband distribution of edge provider content are heightened in this Transaction.

⁹³ See *Comcast-NBCU Order*, 26 FCC Rcd. at 4255 ¶ 41 (finding that online video is potentially a substitute to an MVPD service).

⁹⁴ There is nothing, of course, preventing an OVD from offering a substitute service for MVPD service in the future. See Dorothy Pomerantz, *DISH-Disney Deal Could Help Speed Cord-Cutting Options*, *Forbes* (Mar. 4, 2014), <http://www.forbes.com/sites/dorothypomerantz/2014/03/04/dish-disney-deal-could-help-speed-cord-cutting-options/> (“Although the details haven't been worked out, Dish could, at some point in the near future, sell the package of Disney channels to viewers who aren't Dish subscribers as a standalone option.”).

⁹⁵ See *Comcast-NBCU Order*, 26 FCC Rcd. at 4247 ¶ 86.

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previously indicated, “[b]ecause OVDs today affect MVPDs’ decisions, they are appropriately treated as participants” in a market affected by transactions involving MVPDs.⁹⁶ MVPDs therefore have the incentive and the ability to foreclose OVDs from competing with their own online video and pay-television products.

Many of the public interest harms posed by this Transaction stem from the ability of the combined entity to foreclose significantly an OVD’s access to its customers, thereby diminishing competition in the broader video programming distribution market. The Commission has determined that “the deployment of advanced video services is a recognized public interest benefit.”⁹⁷ Even more recently, the Commission recognized the “most significant trends” in the market for the delivery of video content included “the continuing development, and consumer usage, of time and location shifted viewing of video programming, the expansion of digital and high definition programming, and the progress of the online video industry.”⁹⁸ Comcast and other MVPDs regard OVDs as competitors and have the incentive to use their market power to stifle competition from OVDs and new or potential entrants to the video programming distribution marketplace. Therefore, the Commission also must consider the Transaction’s harms in the video programming distribution marketplace likely to be caused by the combined entity’s increased ability to harm OVDs.

⁹⁶ Competitive Impact Statement, *United States v. Comcast Corp., General Electric Co. and NBCUniversal, Inc.*, No. 1:11-cv-00106, at 20 (D.D.C. Jan. 18, 2011).

⁹⁷ *Adelphia Order*, 21 FCC Rcd. at 8312 ¶ 256.

⁹⁸ *Fifteenth Video Competition Report*, 28 FCC Rcd. at 10498 ¶ 1.

IV. THE MERGED ENTITY'S INCENTIVE TO HARM EDGE PROVIDERS AND DIMINISH COMPETITION IN THE VIDEO MARKETPLACE IS WELL ESTABLISHED

Comcast's incentive to discriminate against an OVD is well established. The FCC has found its incentive to be apparent, as has the DOJ. Even Applicants make their incentive plain by citing OVDs as the key driver of this transaction—both its impetus and its justification—and they laud their efforts to develop competing services and platforms to those currently deployed by OVDs. The greatest indication of Comcast's incentive to harm OVDs comes from its recent actions aimed at raising Netflix's costs by denying its own subscribers access to Netflix's content until Netflix "paid up."

A. Applicants Have the Incentive to Protect Both Their Linear Video Services and Affiliated OVDs From Competition

Both the Commission and the DOJ have acknowledged that "[o]nline content, applications, and services available from edge providers over broadband increasingly offer actual or potential competitive alternatives to broadband providers' own . . . video services."⁹⁹ The Commission has further noted that vertically integrated MVPDs "have incentives to interfere with the operation of third-party Internet-based services that compete with the providers' revenue-generating . . . pay-television services."¹⁰⁰

ISPs also have an incentive to raise revenues by extracting terminating access fees from edge providers. The Commission has observed that ISPs "may have incentives to increase revenues by charging edge providers, who already pay for their own connections to the Internet, for access or prioritized access to end users" even though "broadband providers have not

⁹⁹ *Preserving the Open Internet Order*, 25 FCC Rcd. at 17916 ¶ 22.

¹⁰⁰ *Id.*

historically imposed such fees.”¹⁰¹ Edge providers would not pay for improved service if they were satisfied with their existing service, which, as the Commission stated, creates “an incentive to degrade or decline to increase the quality of the service they provide to non-prioritized traffic.”¹⁰²

The DOJ and the Commission recognized these incentives in their review of Comcast’s acquisition of NBC Universal. The DOJ concluded that “Comcast is the dominant high-speed ISP in much of its footprint and therefore could disadvantage OVDs in ways that would prevent them from becoming better competitive alternatives to Comcast’s video programming distribution services.”¹⁰³ The DOJ found that Comcast could suppress OVDs in a variety of ways, such as giving “priority to non-OVD traffic on its network, thus adversely affecting the quality of OVD services that compete with Comcast’s own MVPD or OVD services.”¹⁰⁴

The Commission’s analysis of Comcast’s incentives led to the same conclusion in its evaluation of the Comcast-NBC Universal transaction. The Commission determined that “Comcast-NBCU will have the incentive and ability to discriminate against, thwart the development of, or otherwise take anticompetitive actions against OVDs.”¹⁰⁵ Specifically, “as a vertically integrated company, Comcast will have the incentive and ability to hinder competition from other OVDs, both traditional MVPDs and standalone OVDs, through a variety of

¹⁰¹ *Id.* at 17919 ¶ 24.

¹⁰² *Id.* at 17922 ¶ 29.

¹⁰³ Competitive Impact Statement, *United States v. Comcast Corp., General Electric Co., and NBC Universal, Inc.*, Case No. 1:11-cv-00106, at 37 (D.D.C. Jan. 18, 2011).

¹⁰⁴ *Id.*

¹⁰⁵ *Comcast-NBCU Order*, 26 FCC Rcd. at 4268 ¶ 78.

anticompetitive strategies.”¹⁰⁶ The Commission’s review revealed a record “replete with e-mails from Comcast executives and internal Comcast documents showing that Comcast believes OVDs pose a potential threat to its businesses.”¹⁰⁷

B. Applicants Are Developing Services to Compete With OVDs While Protecting Their Current Bundling Strategies

Applicants and their experts recognize the threat posed by OVDs and other services, and attempt to rationalize the merger as an effort to fend off this competition by better positioning the combined entity “to attract technology and content partners looking for a broad new platform and customer base for innovation and distribution of their products and offerings.”¹⁰⁸ Even as they develop new services and offerings, Applicants have a tremendous incentive to protect their existing MVPD businesses. MVPD subscriptions provide the largest source of revenue for both Comcast and TWC. In the second quarter of 2014, video packages made up 47.5 percent of Comcast’s total cable communications revenue while residential broadband made up 25.5 percent.¹⁰⁹ TWC’s numbers were similar: 54.6 percent of its total revenue came from its video service.¹¹⁰

¹⁰⁶ *Id.* at 4263 ¶ 61.

¹⁰⁷ *Id.* at 4272 ¶ 85. In response to the Commission’s concerns, Comcast agreed to network neutrality conditions, which prohibit Comcast-NBCU and Comcast from prioritizing affiliated Internet content over unaffiliated Internet content or traffic, and require Comcast and Comcast-NBCU to comply with the Commission’s 2010 open Internet rules. *Id.* at 4275 ¶ 94 (citing *Preserving the Open Internet Order*).

¹⁰⁸ *Applications, Public Interest Statement*, Rosston and Topper Decl. ¶ 83.

¹⁰⁹ Comcast, *Comcast Reports 2nd Quarter 2104 Results* (Jul. 22, 2014), available at <http://www.cmcsa.com/releasedetail.cfm?ReleaseID=861091>.

¹¹⁰ Time Warner Cable, *News: Time Warner Cable Reports 2014 Second-Quarter Results* (Jul. 31, 2014), available at <http://ir.timewarnercable.com/files/2014%20Earnings/2Q14/Q2%202014%20TWC%20Earnings%20Release%20FINAL.pdf>.

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Although online video services are still relative newcomers in the video programming marketplace, Americans are shifting toward more online video streaming. The number of broadband subscribers already has surpassed the number of pay TV subscribers.¹¹¹ This creates both an opportunity and a risk for cable providers. Their largely upgraded networks and high-speed broadband “can make them the first call for consumers seeking fast Internet connections.”¹¹² At the same time, “the onus is on them to provide a compelling video experience at an attractive price.”¹¹³ If they fail to do so, OVDs may pose a significant long-term threat to Applicants’ market power.¹¹⁴

Comcast is looking to fend off the perceived threat from OVDs while it completes the migration to an IP platform. Comcast recently began investing in a migration of its linear video services to IP cable. It invested {{ }} in that effort last year and plans to invest an additional {{ }} in 2014.¹¹⁵ That migration will hasten a blurring of the lines

¹¹¹ Stacey Higginbotham, *Broadband is Now a Bigger Business than TV for Big Cable Providers*, Gigaom (Aug. 15, 2014), <https://gigaom.com/2014/08/15/broadband-is-now-a-bigger-business-than-tv-for-big-cable-providers/> (citing Press Release, Leichtman Research Group, About 385,000 Add Broadband in the Second Quarter of 2014 (Aug. 15, 2014), <http://www.leichtmanresearch.com/press/081514release.html>) (“[T]he Comcast and Time Warner Cable merger is really about broadband [W]hile Comcast may argue about the benefits the deal poses to pay TV consumers, the regulatory focus needs to be on how this deal will change the level of competition in broadband. Because clearly, the consolidation is tilting toward cable providers and those cable providers are doing a lot more than merely focusing on pay TV.”). Comcast and Time Warner Cable alone added nearly 300,000 new broadband subscribers in the second quarter of 2014. *Id.*

¹¹² Announcement: Moody’s: Broadband Customers Soon To Surpass Video Customers For Cable Companies, Moody’s Investor Service (July 24, 2014), *available at* https://www.moody.com/research/Moodys-Broadband-customers-soon-to-surpass-video-customers-for-cable--PR_304886?WT.mc_id=NLTITLE_YYYYMMDD_PR_304886.

¹¹³ *Id.*

¹¹⁴ Evans Decl. ¶ 34.

¹¹⁵ *Applications, Public Interest Statement* at 82.

between over-the-top streaming video and traditional linear cable. Eventually, cable programming could become just another streaming IP video service. Comcast's X1 platform already allows customers "to stream practically their entire cable channel lineup . . . to computers, smartphones, and tablets in the home."¹¹⁶ Comcast XFINITY on Demand service also delivers video-on-demand content via IP to consoles like Microsoft's Xbox and the Samsung SmartTV.¹¹⁷

Comcast's Streampix service most closely resembles a third-party platform-independent subscription OVD service. Streampix is a \$4.99 per month streaming video service that features content from Disney-ABC, NBC Universal, Sony Pictures, Warner Brothers, and others.¹¹⁸ Streampix is available only to Comcast's Xfinity customers, and subscribers to higher tier packages may receive the service without additional charge.¹¹⁹ Thus, even when it chooses to go head-to-head against other OVDs, Comcast attempts to enhance, rather than break, the bundle.

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The preservation of its core video business and protective layer of bundling provides Applicants with their clearest incentive to harm OVDs that they perceive as potential competitive

¹¹⁶ *Id.* at 80.

¹¹⁷ *Id.* at 82.

¹¹⁸ Michael Gorman, *Comcast To Launch Xfinity Streampix Streaming Video Service, Challenge Netflix, Hulu, And Amazon*, Engadget (Feb. 21, 2012), available at <http://www.engadget.com/2012/02/21/comcast-reveals-xfinity-streampix-streaming-video-service-chall/>.

¹¹⁹ *Streampix*, Comcast, <http://www.comcast.com/streampix> (last visited Aug. 23, 2014).

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threats. Applicants have every incentive to ensure that, even if third-party OVDs are here to stay as a complement to their own franchise, OVDs never jeopardize it. Moreover, Comcast has every incentive to capture as much value as it can from the broadband service that OVDs rely on to reach end users.

C. The Best Indication of Comcast's Incentives Is Its Conduct

The clearest indication of the combined entity's incentive to harm OVDs is that Comcast in fact has done so. As discussed below, Comcast already has used its ability to control interconnection points into its network in order to raise the costs for OVDs. Applicants contend that they have no incentive to foreclose edge providers' access to their broadband customers because "Comcast needs edge providers to offer attractive content, applications, and services so that existing Internet customers continue to demand Comcast's broadband service and new Internet consumers choose Comcast."¹²¹ The fact that Comcast already has undertaken the action feared, with no apparent repercussion undercuts Applicants' contention. As Netflix's expert economist Dr. David Evans explains, "[w]hat Comcast did do trumps speculation on what Comcast would do according to economic theories based on various unsupported assumptions."¹²²

V. APPLICANTS ALREADY HAVE THE ABILITY TO HARM OVDS

Even without the proposed Transaction, Comcast already has demonstrated the ability to harm OVDs. There are virtually no competitive constraints on Comcast's behavior due to the lack of high-speed broadband alternatives capable of supporting online video content. Even if

¹²¹ *Applications, Public Interest Statement* at 157.

¹²² *See Evans Decl.* ¶ 25 (emphasis omitted).

there were sufficient wired alternatives, high switching costs prevent customers from changing ISPs.

Free from competitive restraint, Comcast has demonstrated its willingness to foreclose opportunities for OVDs in at least two ways. First, Comcast has used its control over its interconnection policies, capacity, and routes to manufacture congestion and bandwidth crises designed to extract interconnection rents directly or indirectly from OVDs—effectively raising their costs.¹²³ Second, Comcast also has used consumer-facing policies, such as data caps, set top box restrictions, and its leverage over programmers to push consumers toward its own products, services, and devices.

A. Comcast and Time Warner Already Have Market Power in Local High-Speed Broadband Internet Access Service Markets

From an OVD's perspective, the market for the distribution of online video content is national, but consumers typically access high-speed broadband in local markets: consumers select a high-speed broadband provider based on the providers available at their residences. In these local markets, Applicants argue that they each face—and that the combined company would continue to face—competition from “robust broadband providers” before and after the Transaction.¹²⁴ The data provided by Applicants to support their claims of competition, however, do not provide any meaningful information on the availability of broadband service to

¹²³ By withholding a critical input from OVD rivals, the combined company could “disadvantage its downstream competitors by raising the price of an input to all downstream firms” or by “engaging in a foreclosure strategy, *i.e.*, by withholding a critical input from them.” *Adelphia Order*, 21 FCC Rcd. at 8257 ¶ 119-20. In such cases, firms can profit from even temporary foreclosure by degrading connections and driving consumers to unsubscribe from degraded streaming services. The Commission has found that often, subscribers “do not immediately switch back to the competitor’s product once the foreclosure has ended” allowing the foreclosing firm to gain customers at the foreclosed competitor’s expense. *Id.* at 8257-58 ¶¶ 119-21.

¹²⁴ *Applications, Public Interest Statement* at 141.

Comcast or Time Warner Cable subscribers or the state of competition in the delivery of broadband service.

1. There is Minimal Competition for High-Speed Wired Connections

Applicants are able to maintain their market power in local residential broadband markets because they face no meaningful wired broadband competition, which would continue to be the case post-merger. Despite Applicants' claim that "the vast majority of consumers have access to multiple fixed broadband competitors,"¹²⁵ an average Comcast or TWC customer typically has access to only one other wired operator providing broadband service of at least 3 Mbps to her household.¹²⁶ This is not significant competition.

Even these figures overstate the relevant number of high-speed broadband alternatives for this Transaction because 3 Mbps is far below the speed consumers need (and have come to expect) in order to watch high-quality video from an OVD. As consumers demand faster broadband service, the number of alternatives available to them diminishes. The average number of alternatives is a fraction of that suggested by Applicants, with barely one out of three households having access to a competitive service offering of 25 Mbps or more.

Figure 3: Comcast and TWC Subscribers' High-Speed Alternatives

¹²⁵ *Id.* at 44 (citing Israel Decl. ¶ 43).

¹²⁶ Evans Decl. Table 2.

Comcast and TWC Subscribers Typically Have Limited High-Speed Alternatives ¹²⁷			
Wired ISP	Comcast	Time Warner Cable	Combined Entity
Average Number of Wired Alternatives—Speeds Above 3 Mbps	1.42	1.09	1.29
Average Number of Alternatives—Speeds of at Least 10 Mbps	0.97	0.78	0.90
Average Number of Alternatives—Speeds of at Least 25 Mbps	0.42	0.39	0.41

2. High Switching Costs Prevent Consumers from Changing ISPs

Even where there is an adequate alternative high-speed broadband service, the high costs of switching broadband providers impose a substantial barrier between consumers and these alternatives. Based on the results from the Commission’s 2010 *Broadband Decisions* survey, only 11.6 percent of respondents switched ISPs in the prior year excluding those who changed ISPs because they moved.¹²⁸ Although a majority of respondents suggested that it would be easy

¹²⁷ *Id.*

¹²⁸ See *id.* at ¶ 82 (citing FCC, *Broadband Decisions: What Drives Consumers to Switch—Or Stick with—Their Broadband Internet Provider*, 5-6 (Dec. 2010), available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-303264A1.pdf (“*Broadband Decisions Survey*”)). This figure is likely overstated given that many respondents claimed multiple “home” broadband providers, including mobile wireless. *Broadband Decisions Survey* at 4 n.4. The survey was conducted in conjunction with the FCC’s report on broadband use and adoption in America. As explained in that report, respondents could pick more than one type of home broadband connection and 44 percent of respondents selected “Mobile broadband wireless connection for your computer or cell phone” as a home broadband connection, which do not offer speeds comparable to wired broadband services. John B. Horrigan, *Broadband Adoption and Use in America*, 14 (OBI Working Paper Series No. 1 Mar. 2010), available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-296442A1.pdf. However, mobile wireless connections are immune from

or very easy to change broadband providers, the numbers went down substantially for subscribers who actually had contemplated changing providers. The survey suggested that “it is possible that those who have considered switching have looked into it more closely than those who have not—and as a result have found it to be a more involved process than those with less information.”¹²⁹

To describe switching wireline broadband providers as an “involved process” is a charitable characterization. Consumers face significant switching costs when changing broadband providers, including “early termination fees; the inconvenience of ordering, installing, and set-up, and associated deposits or fees; the possible difficulty returning the earlier broadband provider’s equipment and the cost of replacing incompatible customer-owned equipment; the risk of temporarily losing service; the risk of problems learning how to use the new service; and the possible loss of a provider-specific email address or website.”¹³⁰ Switching costs factored heavily in the D.C. Circuit’s agreement with the Commission that wireline broadband providers act as “terminating monopolists” or “gatekeepers” with respect to edge providers:

[I]f end users could immediately respond to any given broadband provider's attempt to impose restrictions on edge providers by switching broadband providers, this gatekeeper power might well disappear. . . . For example, a broadband provider like Comcast would be unable to threaten Netflix that it would slow Netflix traffic if all Comcast subscribers would then immediately switch to a competing broadband provider. But we see no basis for

many of the switching costs associated with changing fixed wireline broadband subscribers, which are discussed below.

¹²⁹ *Broadband Decisions Survey* at 7.

¹³⁰ *Preserving the Open Internet Order*, 25 FCC Rcd. at 17924-25 ¶ 34.

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questioning the Commission's conclusion that end users are unlikely to react in this fashion.¹³¹

Comcast's Agreement for Residential Services demonstrates some of the hurdles in both leaving an existing broadband provider and joining a new one. Within ten days of disconnection of service, a subscriber must return all customer premises equipment in working order to Comcast's local business office or to its designee.¹³² Failure to do so could result in the subscriber paying the full price of the equipment plus incidental replacement costs.¹³³ In some cases a "minimum term addendum" may limit or penalize a consumer's ability to cancel service.¹³⁴ Finally, a request to cancel service may subject a consumer to a lengthy and possibly unpleasant conversation with a customer service representative intent on dissuading the consumer from doing so.¹³⁵

For consumers, initiating new service can prove just as daunting as canceling existing service, if not more so. In the Commission's survey, the top three reasons cited for staying with the current provider involved the cost of switching to a new service rather than the cost of leaving an old one: installation fees, hassles associated with installation, and deposits for new

¹³¹ *Verizon v. FCC*, 740 F.3d 623, 646 (D.C. Cir. 2014). The court noted that the Commission declined to extend the *Open Internet* rules to dial-up Internet access "because telephone service has historically provided the easy ability to switch among competing dial-up Internet access services." *Id.* (quoting *Preserving the Open Internet Order*, 25 FCC Rcd. at 17935 ¶ 51).

¹³² *Comcast Agreement for Residential Services*, at 9.d. ("Your Obligations Upon Termination") available at <http://www.comcast.com/Corporate/Customers/Policies/SubscriberAgreement.html>. Upon Comcast's request (but not the customer's), the customer shall permit a Comcast employee, agent, contractor, or representative to access the premises to remove customer premises equipment. *Id.*

¹³³ *Id.*

¹³⁴ *Id.* at 9.b.

¹³⁵ Susanna Kim, *Comcast Apologizes for 'Unacceptable' Customer Service Call That Won't End*, ABC News (June 15, 2014), available at <http://abcnews.go.com/Business/comcast-apologizes-unacceptable-customer-service-call-end/story?id=24567047>.

service.¹³⁶ Finally, consumers are reluctant to change an existing bundle of services, some of which may not be offered by the alternative broadband provider.¹³⁷ That the two largest cable ISPs are also the two held in the lowest regard by their customers reflects the difficulty in changing broadband providers.¹³⁸

Switching costs also make it unclear whether consumers would behave differently if they had better information about the cause of degraded performance and the availability of superior alternatives. When Netflix members experience degraded video quality and performance due to congestion at interconnection points, calls to Netflix customer support increase.¹³⁹ Consumers have no idea why the degradation takes place or who is responsible—they just want it fixed.¹⁴⁰

Last year, Netflix launched its ISP Speed Index to inform consumers in eight countries about the relative performance of various wired ISPs in streaming Netflix video traffic.¹⁴¹ The

¹³⁶ *Broadband Decisions Survey* at 8.

¹³⁷ *Id.*

¹³⁸ American Customer Satisfaction Index, ACSI Telecommunications and Information Report 2014, at 2 (May 20, 2014), *available at* <http://www.theacsi.org/news-and-resources/customer-satisfaction-reports/reports-2014/acsi-telecommunications-and-information-report-2014/acsi-telecommunications-and-information-report-2014-download>.

¹³⁹ As discussed below, *infra* Section IV.C., those calls skyrocket when subscribers of large ISPs, including Comcast, experience significant degradation.

¹⁴⁰ *See* Statement by FCC Chairman Tom Wheeler On Broadband Consumers and Internet Congestion (June 13, 2014), <http://www.fcc.gov/document/chairman-statement-broadband-consumers-and-internet-congestion> (“In reading the emails I receive, I thought this one . . . pretty well sums up public concern: ‘. . . Is Verizon abusing Net Neutrality and causing Netflix picture quality to be degraded by ‘throttling’ transmission speeds? Who is at fault here?’ . . . Consumers pay their ISP and they pay content providers like Hulu, Netflix or Amazon. Then when they don’t get good service they wonder what is going on.”).

¹⁴¹ *Netflix “ISP Speed Index” Shows Best Internet Service Providers for Streaming*, PR Newswire (Mar. 11, 2013), *available at* <http://www.prnewswire.com/news-releases/netflix-isp-speed-index-shows-best-internet-service-providers-for-streaming-196906081.html>.

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ISP Speed Index now covers broadband providers in 20 countries.¹⁴² Google recently followed suit by launching its Video Quality Report in the United States.¹⁴³ The Video Quality Report shows a consumer the video quality her ISP can offer and also displays the video quality from other providers in the area.¹⁴⁴

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¹⁴² *The ISP Speed Index From Netflix*, Netflix, <http://ispspeedindex.netflix.com/> (last visited Aug. 22, 2014).

¹⁴³ Paul Sawers, *Google Can Now Shame US ISPs With Its YouTube Video Quality Report, More Countries to Follow*, TheNextWeb.com (May 29, 2014), <http://thenextweb.com/media/2014/05/29/google-can-now-shame-us-isps-youtube-video-quality-report-countries-follow/>.

¹⁴⁴ *See Video Quality Report: Video Streaming Quality Results for Washington, D.C.*, Google, <https://www.google.com/get/videoqualityreport/> (last visited Aug. 22, 2014).

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The resiliency of Comcast's market power in the face of low customer satisfaction and high switching costs means that Comcast essentially is unrestrained and unharmed when it elects to forgo routine upgrades that would reduce or eliminate congestion at interconnection points, and provide its customers with high-quality streaming video, in order to harm OVDs. This, in turn, leaves OVDs largely powerless in the face of that indifference to the user experience. Applicants attempt to turn this dynamic on its head, contending that "edge providers exert substantial influence and control over the quality of the end-user experience with their content at specific ISPs, thus ensuring that the edge provider retains significant bargaining power, given its ability to inflict harm on an ISP's reputation and quality."¹⁴⁸ Were this in fact the case, Comcast would scramble to remedy congestion of OVD traffic at interconnection points, rather than seeking to create it, as it did with Netflix.

B. Four Terminating Access Networks (Including Comcast and TWC) Already Have Demonstrated Ability to Leverage Control of Interconnection to Foreclose OVDs or Raise Their Costs

In Netflix's experience to date, four broadband Internet access providers already have significant power over an OVD's ability to provide video services to its customers.¹⁴⁹ Two of them—the only ones that are cable-platform Internet access providers and the only ones that are not also Tier 1 networks¹⁵⁰—propose to consolidate in this Transaction. As explained below,

¹⁴⁸ Israel Decl. ¶ 85.

¹⁴⁹ "When a producer with market power in one market segment attempts to project that market power into upstream or downstream segments that would otherwise be competitive, that constitutes economic foreclosure." J. Scott Marcus, Presentation to ANACOM: Interconnection, Two-Sided Markets, and BERC's Consultation on IP Interconnection in the Context of Net Neutrality 41 (Feb. 14, 2013), *available at* http://www.wik.org/uploads/media/NGN_2013_02_14_ANACOM.pdf ("Marcus Presentation").

¹⁵⁰ Tier 1 networks (sometimes referred to as "backbone providers") are those networks capable of reaching the entire Internet without purchasing transit from other ISPs. Applications Filed by

congestion at interconnection points—the points where two networks exchange traffic—gives these terminating access networks the means to foreclose OVDs and other edge providers or raise their costs without lifting a finger. Comcast already has proven that this foreclosure threat is more than theoretical.

1. Four Terminating Access Networks Can Congest Routes into Their Networks and Extract Terminating Access Fees from Edge Providers

Terminating access networks¹⁵¹ carry traffic to and from end users who are wholly reliant on the networks for their access to the broader Internet. Each terminating access network enjoys a terminating access monopoly with respect to its end users. Just as “the terminating network possesses *terminating monopoly power* to the extent that no other network can complete calls to that number,”¹⁵² these networks enjoy a terminating access monopoly because there is no way to deliver traffic requested by an ISP’s subscriber other than through an interconnection point with

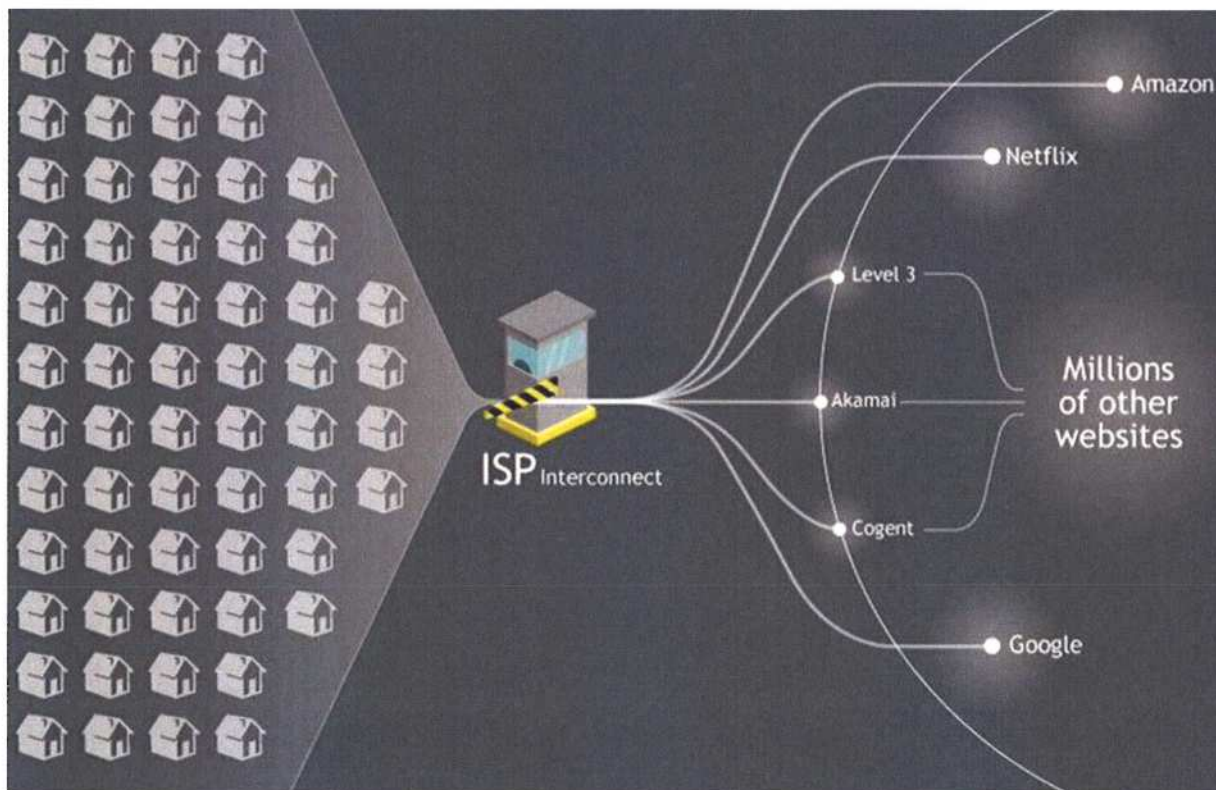
Global Crossing Ltd. and Level 3 Commc’ns, Inc. for Consent to Transfer Control, *Memorandum Opinion and Order and Declaratory Ruling*, 26 FCC Rcd. 14056, 14065 ¶ 19 (2011) (“*Global Crossing*”).

¹⁵¹ See Declaration of Ken Florance ¶ 3 (Aug. 25, 2014) (“Florance Decl.”) (using the term “terminating access network” to mean “last mile residential ISPs such as Comcast and Time Warner Cable (TWC). . . . [A] terminating access network is the final destination for delivery of content to consumers; the majority of commercial content does not originate from that kind of network or use that kind of network to reach other points on the Internet.”). See also WILLIAM B. NORTON, *THE INTERNET PEERING PLAYBOOK: CONNECTING TO THE CORE OF THE INTERNET* 137 (2014 ed.) (“Access networks (also known as ‘eyeball networks’) are Internet Service Providers that sell Internet access to end-users. Access Networks include cable companies, telephone companies and wireless Internet providers. Since Internet users primarily download content, Access Network traffic is generally in-bound (toward the end-user”); *Applications, Public Interest Statement* at 6 (“Internet service providers (“ISPs”) like Comcast and TWC . . . serve as a means of access for any and all of the Internet content their customers want.”).

¹⁵² *Marcus Presentation* at 12 (emphasis in the original).

that ISP. In other words, “[t]here is only one way to get to the Comcast customers—all traffic must directly or indirectly make its way through the Comcast network[.]”¹⁵³

Figure 4: Terminating Access



Although every terminating access network is a terminating access monopoly, in Netflix’s experience to date, four terminating access networks have the requisite market power to leverage their terminating monopoly to foreclose edge providers or raise their costs to access the ISP’s last-mile networks. Interconnection market power results from a combination of factors, of which the number of broadband Internet access subscribers and the number of settlement free connections with Tier 1 networks (which enable networks to degrade Netflix traffic without substantially degrading other traffic to and from the Internet) are critical. Two of the ISPs with

¹⁵³ William B. Norton, *The 21st Century Peering Ecosystem*, DrPeering International (2014), available at <http://drpeering.net/core/ch10.2-The-21st-Century-Internet-Peering-Ecosystem.html>.

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this market power—Verizon and AT&T—have long been Tier 1 networks because of their background as telecommunications companies. The other two ISPs—the Applicants—are the only two cable companies to date that have the market power to engage in congestion strategies to extract access fees from Netflix.

Applicants attempt to downplay their control over the interconnection points into their networks by arguing that the “hyper-interconnectedness” of the Internet backbone prevents any “major player, such as Comcast or TWC,” from leveraging control of the routes into their network to foreclose edge providers.¹⁵⁴ Because “transit and peering can be readily obtained from any of the dozens of providers on a nationwide basis,”¹⁵⁵ Applicants argue that OVDs and other content providers can send requested traffic to an ISP’s subscribers without entering into a direct relationship or receiving “permission” from the ISP.¹⁵⁶ They point to the Commission’s order in *Global Crossing*, which concluded that because “86% to 88% of Level 3 and GCL transit or direct Internet access (DIA) customers are ‘multi-homed’ with providers other than LEVEL 3 and GCL . . . if the combined entity were to engage in connection degradation or price increases, a large percentage of its customer base would be able to transition to another provider.”¹⁵⁷

Reliance on this precedent is misplaced. In *Global Crossing*, because there were other backbone providers and no backbone provider exclusively served larger terminating access

¹⁵⁴ *Application, Public Interest Statement* at 159.

¹⁵⁵ *Applications, Public Interest Statement* at 160-61.

¹⁵⁶ *Id.* at 159.

¹⁵⁷ *Global Crossing*, 26 FCC Rcd. at 14068 ¶ 27 (“*Global Crossing*”); see also *Applications, Public Interest Statement* at 161 (noting that “transit and peering can readily be obtained from any of dozens of providers on a nationwide basis”).

networks, an edge provider could reach an end user without going through the merging backbone providers' networks. But this feature of the transit market does not apply to large terminating access networks. There is simply no way to reach a Comcast broadband subscriber other than through Comcast, and there is no way to reach a TWC subscriber other than through TWC. No matter how many routes there are to Comcast's or TWC's network, Comcast's and TWC's broadband customers are "single homed."¹⁵⁸

Large terminating access networks can wield their market power over interconnection in two ways. First, they can "de-peer" transit providers or content delivery networks ("CDNs") that they interconnect with on a settlement-free basis, essentially severing the connection between their networks and forcing them to pay for transit. Second, a subtler but equally effective way to foreclose edge providers or raise their costs is to allow routes carrying that edge providers' traffic to congest by forgoing routine capacity upgrades. This tactic is becoming more common among large U.S. ISPs. Level 3 recently noted that, globally, it has chronically congested ports with only a "handful" of its 51 peers.¹⁵⁹ Of that handful, all but one is in the United States, and, "[n]otably, all chronically congested peers are large mass-market retail ISPs."¹⁶⁰

2. An OVD's Ability to Manage Congestion at Interconnection Points Is Critical to Delivering its Service to its Customers

OVDs are particularly vulnerable to congestion and therefore are under acute pressure to pay terminating access fees to alleviate congestion. Emails, online shopping, and basic Web

¹⁵⁸ See NORTON at 138 ("Some in the industry call these customers 'captive' since there is no alternative path to reach them.").

¹⁵⁹ Comments of Level 3 Communications, LLC, Protecting and Promoting the Open Internet, GN Docket No. 14-28, at 11 (July 15, 2014).

¹⁶⁰ *Id.*

browsing are highly tolerant of port congestion.¹⁶¹ By contrast, “VoIP and streaming video [traffic] . . . are the most sensitive to performance degradation caused by interconnection congestion.”¹⁶² Higher quality streaming video requires a reliable high-speed bit rate to avoid rebuffering and the “pixilation, freeze frames, audio garbling, etc., [that] effectively destroys a video watching experience for the end user.”¹⁶³

Even mild congestion can impact consumer behavior. A 2012 study by the University of Massachusetts (Amherst) and Akamai Technologies found that viewers of streaming video content begin to abandon a video if it takes more than two seconds to start up, with each incremental delay resulting in a 5.8 percent increase in the abandonment rate.¹⁶⁴ Although some of this abandonment is due to “video surfing,” a poor viewing experience makes a viewer less likely to revisit the same site within a week than a similar viewer who did not experience a failure.¹⁶⁵ This impact is magnified for users who watch video on “a better connected computer or device” such as those on fixed broadband connections.¹⁶⁶ The study found that “the likelihood

¹⁶¹ *Marcus Presentation* at 31.

¹⁶² Comments of Level 3 Communications, LLC, Protecting and Promoting the Open Internet; Preserving the Open Internet, GN Docket Nos. 14-28, 09-191, at 7 (Mar. 21, 2014).

¹⁶³ William B. Norton, *The 21st Century Internet Peering Ecosystem*, DrPeeringInternational, available at <http://drpeering.net/core/ch10.2-The-21st-Century-Internet-Peering-Ecosystem.htm>.

¹⁶⁴ S. Shunmuga Krishnan and Ramesh K. Sitaraman, Proceedings of the 2012 ACM Conference on Internet Measurement, *Video Stream Quality Impacts Viewer Behavior: Inferring Causality Using Quasi-Experimental Designs*, Univ. Mass and Akamai Techs. 1 (Nov. 14, 2012), available at https://people.cs.umass.edu/~ramesh/Site/HOME_files/imc208-krishnan.pdf.

¹⁶⁵ *Id.*

¹⁶⁶ *Id.* at 3.

that a viewer on fiber abandoned earlier than a similar viewer on a mobile device exceeded the likelihood that the opposite happens by 38.25 [percent].”¹⁶⁷

This result makes intuitive sense. Mobile device users, familiar with dropped calls and poor reception, are aware that localized congestion is common. However, consumers who purchase 10 Mbps broadband packages from fixed broadband ISPs expect to receive traffic at something approaching that level. If their viewing experience is inconsistent with that expectation, they are as likely as not to assume that the problem is with the video streaming service and move to a different application.

Much of this abandonment occurs in part because of the low switching costs associated with OVDs and the number of alternatives, some of which may have substantially overlapping libraries of content. Consumers can reach a growing field of streaming options including Hulu, Verizon’s Redbox, Blockbuster, Google Play, Apple iTunes, and Crackle with a few mouse clicks or a few buttons on a remote. Consumers viewing online streaming services through their set-top boxes can also switch to VOD, TV Everywhere, or linear video options offered by the MVPD/ISP.

Leaving a subscription-based OVD is vastly simpler than unsubscribing from a linear MVPD service. There is no customer premises equipment to return, no cancellation fee, and no phone call with a persistent customer service representative attempting to dissuade the consumer from abandoning the service. Indeed, Netflix strives to be extremely straightforward as evidenced by its no-hassle online cancellation. A consumer who is dissatisfied with the quality of streaming video can unsubscribe from Netflix in three clicks, and gain access to another OVD, including Comcast’s, just as quickly.

¹⁶⁷ *Id.*

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Given the sensitivity of online video traffic to congestion, the ubiquity of alternatives, and the ease of switching among them, OVDs must make substantial investments to ensure that requested video traffic can reach its members. At a cost of more than \$100 million in research, development, and deployment costs,¹⁶⁸ Netflix created Open Connect, a single-purpose CDN, to ensure that its members receive Netflix's programming in high-quality video formats without rebuffering or other performance issues. Open Connect allows the most popular Netflix content to be stored at interconnection exchange points or any location a terminating access network requests and uses a "proactive caching" method to conduct daily content updates during periods when networks are least used, such as early in the morning, to avoid congesting the network.¹⁶⁹

Globally, Netflix delivers its traffic without payment to 99 percent of terminating access networks. In the United States alone, Netflix exchanges traffic on a settlement-free basis with [[]] networks. Further, if an ISP has an individual market area serving a population of at least 100,000 subscribers, Netflix will install Open Connect appliances at that location at no charge to the ISP.¹⁷⁰ By placing popular Netflix content closer to those ISP subscribers who are seeking access to it (either through embedded cache servers or by interconnecting at public Internet exchange points) Netflix can help terminating access networks avoid creating unnecessary traffic "up the chain"—either over the middle-mile or at the ISP's interconnection points. Notably, however, none of the U.S.'s four major ISPs has agreed to partner with Open Connect without payment.

¹⁶⁸ Florance Decl. ¶ 42.

¹⁶⁹ Netflix OpenConnect: Appliance Deployment Guide, Netflix, at 7 (Apr. 2014), *available at* <http://oc.nflxvideo.net/docs/OpenConnect-Deployment-Guide.pdf>.

¹⁷⁰ *Netflix Open Connect Content Delivery Network: Open Connect FAQ*, Netflix (May 6, 2012), *available at* <http://ip.fi/~kajtzu/openconnect%20site%20dump.pdf>.

3. Large Terminating Access Networks Can Extract Terminating Access Fees Because They Pose a Significant Threat to OVDs with Fixed-Costs for Content

OVD payments to content providers generally involve some combination of fixed and variable fees.¹⁷¹ Regardless of how those fees are structured, the payments are substantial. For example, Amazon Prime's streaming content costs rose from \$350 million in 2011 to an estimated \$750 million in 2012.¹⁷² With an annual subscription fee of \$99, Amazon must retain approximately 7.6 million subscribers just to cover its annual content costs and even more if those subscribers also impose shipping costs for physical goods. As Amazon invests more in acquiring content from premium cable programmers like HBO and invests in new original series, its streaming content costs are expected to more than double by 2018.¹⁷³ Netflix too faces significant content costs, which accounted for 68.1 percent of its total operating expenses in 2013.¹⁷⁴ To acquire film and television content from studios, networks and production companies, Netflix enters into contracts for periods of 6 months to five years.¹⁷⁵ {{

}}¹⁷⁶ Further, Netflix's increasing investments in original content represent long-term bets that original programming will attract new viewers and convince existing ones to stay.¹⁷⁷

¹⁷¹ Evans Decl. ¶ 123.

¹⁷² Cowen and Company, Amazon.com, 10 (Nov. 27, 2012) (available by subscription).

¹⁷³ *Id.*

¹⁷⁴ Evans Decl. ¶ 130, Table 5.

¹⁷⁵ Evans Decl. ¶ 129.

¹⁷⁶ *Id.*

¹⁷⁷ Netflix, Annual Report (Form 10-K), at 26 (Feb. 3, 2014) at 26 (although original content still represents less than 10 percent of Netflix's global content expense, it is substantially increasing its investment in original content this year and will continue to do so in the future).

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In order to recover those content costs, OVDs must achieve and maintain a “critical mass” to operate profitably.¹⁷⁸ A healthy subscriber base ensures that OVDs can perpetuate their own virtuous circle between viewers and content. Revenue from viewers enables OVDs to invest in acquiring or creating new content, which in turn attracts new viewers.¹⁷⁹ The reverse is also true: a decline in viewers limits an OVD’s ability to acquire content and less content results in fewer viewers.¹⁸⁰ An OVD’s profits, therefore, depend on its ability to attract a sufficient number of viewers to cover its costs.

For OVDs with long-term fixed-costs for content, large terminating access networks pose a significant threat to profitability because they can foreclose access to such a large portion of the OVD’s subscribers.¹⁸¹ This threat of foreclosure gives large ISPs the ability to extract terminating access fee from OVDs. And the larger the ISP, the more bargaining power it has over an OVD in negotiating such access fees because failure to reach an agreement with a terminating access network that accounts for a very large portion of an OVD’s customers could have a devastating effect on the finances of the OVD.¹⁸² In contrast, a small terminating access network cannot charge an OVD for direct interconnection because failure to reach an agreement with a network that accounts for a very small portion of an OVD’s customers would not be

¹⁷⁸ Evans Decl. ¶ 125.

¹⁷⁹ *Id.* ¶ 126.

¹⁸⁰ *Id.*

¹⁸¹ OVDs that pay variable content fees based on viewership would face less of a threat to their profitability than OVDs that pay entirely fixed fees. OVDs with variable fee structures would reduce some of their costs as revenue fell, thereby reducing the amount of lost profit. The OVDs, however, would likely either lose out on future content deals or have to make fixed-price commitments since content providers would recognize that the fees they could expect would be smaller. *Id.* ¶ 134.

¹⁸² *Id.* ¶ 136.

financially detrimental.¹⁸³ Additionally, a small terminating access network does not have the same ability to manipulate its interconnection points to create artificial congestion.¹⁸⁴

This difference becomes apparent by comparing the terminating access networks that partner with Open Connect for free with those that do not. Most terminating access networks partner with Open Connect because doing so improves a subscriber's viewing experience, which in turn makes broadband subscriptions more valuable to the subscriber. Also, Open Connect relieves potential congestion at interconnection points, which increases the overall value and performance of the terminating access network's broadband service. Unlike all other terminating access networks, the four largest terminating access networks have allowed settlement-free routes carrying Netflix's traffic to congest while agreeing to partner with Open Connect only upon receipt of payment. These networks "presumably made the business decision that the present discounted value of benefits from degrading the quality of the Netflix video stream to [their] subscribers was greater than the present discounted value of the costs."¹⁸⁵

C. Comcast Already Has Exercised Its Market Power over Netflix by Leveraging Congestion to Shift Netflix Traffic to Paid Interconnection

Comcast already has demonstrated its ability to exercise its market power by leveraging its control over interconnection points into its network to raise the costs of "rival" OVDs. Applicants benefit from the relative opacity of the transit market. Most interconnection agreements are confidential and smaller terminating access networks often conclude

¹⁸³ *Id.*

¹⁸⁴ As mentioned above, large access ISPs' market power depends on the size of their subscriber base and also on their ability to route traffic through many settlement-free and paid interconnection points. Smaller access terminating access networks have neither the subscriber base nor the plethora of routing options to exercise power in this way.

¹⁸⁵ Evans Decl. ¶ 115.

interconnection agreements with a simple handshake.¹⁸⁶ As the Commission has acknowledged, assembling a comprehensive view of the interconnection marketplace and its evolution over time is challenging.¹⁸⁷ But Comcast's interconnection disputes with Tier 1 networks and Netflix shows how Comcast already has exercised its market power. Comcast has leveraged congestion at interconnection points to shift OVDs, including Netflix, onto paid routes into its network or direct paid interconnection agreements with Comcast.

The Launch of Netflix's Streaming Service and Its Initial Reliance on CDNs. In 2007, Netflix launched its video streaming service. In preparation for its initial launch, Netflix designed and deployed its own CDN, which Netflix hosted in five locations across the country. Netflix purchased transit from Limelight and Qwest to deliver content from the CDNs.¹⁸⁸ By 2008, however, consumer demand for edge provider content, including Netflix's service, had grown significantly.¹⁸⁹ As a result, it made sense for Netflix to partner with third-party CDNs, which could better manage the relationships with terminating access networks and could host Netflix content in more locations to reduce distances that the content needed to travel to reach the requesting end user—thus enhancing both the consumer experience and network efficiency.

¹⁸⁶ Bill Woodcock & Vijay Adhikari, *Survey of Characteristics of Internet Carrier Interconnection Agreements*, Packet Clearing House, at 2 (May 2, 2011), available at <https://www.pch.net/resources/papers/peering-survey/PCH-Peering-Survey-2011.pdf> (the remaining 99.51 percent were “handshake” agreements in which “the common understanding is that only routes to customers networks are exchanged . . . and that each network will exercise a reasonable duty of care in cooperating to prevent abusive or criminal misuse of the network”).

¹⁸⁷ See Ruth Milkman, Chief of Staff, Federal Communications Commission, Remarks at the Progressive Policy Institute, at 4 (May 27, 2014), <http://www.fcc.gov/document/ruth-milkman-chief-staff-fcc-progressive-policy-institute> (“At the moment, we have many more questions than answers.”).

¹⁸⁸ Florance Decl. ¶ 3.

¹⁸⁹ *Id.* ¶ 30.

In 2008, Netflix entered into agreements for transit with Level 3 and CDN services with Limelight.¹⁹⁰ In 2009, Netflix entered into an agreement for CDN service with Akamai.¹⁹¹

Netflix's 2010 Agreement with Level 3 and the End of Level 3's Settlement-Free

Peering with Comcast. Starting in 2009, the CDN providers on which Netflix relied to distribute its content to Comcast's subscribers—Limelight and Akamai—were forced to pay arbitrary terminating access fees for additional capacity into Comcast's network.¹⁹² Facing the uncertainty of new demands for arbitrary fees, in November 2010 Netflix entered into an arrangement with Level 3, to use Level 3 as one of its CDNs.¹⁹³ Partnering with Level 3 made sense because it had long-standing settlement-free peering arrangements with the major terminating access networks, like Comcast, whose customers requested an increasing amount of streaming video traffic from Netflix.¹⁹⁴

Approximately one week after Netflix's agreement with Level 3 went into effect, Comcast, citing the traffic ratio in its peering policy, demanded payment from Level 3 for terminating traffic on its network (even though that traffic, like all traffic delivered to Comcast, was requested by Comcast's broadband subscribers, who pay Comcast to deliver it).¹⁹⁵ According to Level 3, this was "the first time [that Comcast demanded] a recurring fee from Level 3 to transmit Internet online movies and other content to Comcast's customers who request

¹⁹⁰ *Id.*

¹⁹¹ *Id.* ¶ 4.

¹⁹² *Id.* ¶ 5.

¹⁹³ *Id.* ¶ 6; see also *Netflix Signs Multi-year Deal with Level 3 for Streaming Services*, BusinessWire (Nov. 11, 2010), <http://www.businesswire.com/news/home/20101111005421/en/Netflix-Signs-Multi-Year-Deal-Level-3-Streaming#.U9qahFXD-Uk>.

¹⁹⁴ Florance Decl. ¶ 6.

¹⁹⁵ *Id.* ¶ 37.

such content.”¹⁹⁶ After three days of heavy congestion at interconnection points between Comcast and Level 3’s networks, Level 3 agreed to pay the requested fee for terminating traffic on Comcast’s network.¹⁹⁷

Netflix’s Shift to Transit Providers and Its Deployment of Open Connect. The threat of new access fees being passed through to Netflix were making third-party CDNs a less certain option for Netflix and in early 2012, Netflix began to transition its traffic off of CDNs and onto transit providers with settlement-free routes into Comcast’s network.¹⁹⁸ Netflix also was preparing to launch its own CDN, Open Connect, which would bear most of the burden of delivering traffic to terminating access networks’ subscribers.¹⁹⁹ Netflix continues to invest significantly in Open Connect, an effort that has more than 100 million dollars in research, development, and deployment costs.²⁰⁰

A few months before Netflix launched Open Connect, it also purchased transit from Cogent, which had a settlement-free peering arrangement with Comcast.²⁰¹ Netflix’s experience with Cogent resembled its experience with Level 3. Shortly after Cogent began delivering Netflix traffic requested by Comcast subscribers, Cogent’s routes into Comcast’s network started

¹⁹⁶ Letter from John M. Ryan, Assistant Chief Legal Officer, Level 3 Communications, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket. Nos. 09-191, 07-52, 10-127, at 2 (Nov. 30, 2010).

¹⁹⁷ Florance Decl. ¶ 38.

¹⁹⁸ *Id.* ¶¶ 40-41.

¹⁹⁹ *Id.*

²⁰⁰ Florance Decl. ¶9.

²⁰¹ *Id.*

to congest.²⁰² According to Cogent’s CEO, “[f]or most of Cogent’s history with Comcast . . . [as] Comcast’s subscribers demanded more content from Cogent’s customers, Comcast would add capacity to the interconnection points with Cogent to handle that increased traffic.”²⁰³ After Cogent began carrying Netflix traffic, however, “Comcast refused to continue to augment capacity at our interconnection points as it had done for years prior.”²⁰⁴

Congestion into Comcast’s Network Reaches a Critical Threshold. Netflix attempted to address congested routes into Comcast by purchasing all available transit capacity from transit providers that did not pay access fees to Comcast—which involved agreements with Cogent, Level 3, NTT, TeliaSonera, Tata, and XO Communications.²⁰⁵ Although all six of those providers sold transit to the entire Internet, only three of them—Cogent, Level 3, and Tata—had direct connections to Comcast’s network.²⁰⁶

In 2013, congestion on Cogent’s and Level 3’s routes into Comcast’s network steadily increased, reaching a level where it began to affect the performance of Netflix streaming for Comcast’s subscribers. {{

²⁰² *Id.*

²⁰³ *Competition in the Video and Broadband Markets: The Proposed Merger of Comcast and Time Warner Cable: Hearing Before the H. Judiciary Comm.*, 113th Cong. 5 (May 8, 2014) (written statement of Dave Schaeffer, Founder and CEO, Cogent Communications).

²⁰⁴ *Id.*

²⁰⁵ Florance Decl. ¶ 13.

²⁰⁶ *Id.*

}}²⁰⁷ When Netflix approached Comcast regarding the lack of uncongested settlement-free routes available to its network, Comcast suggested that Netflix return to using CDNs, which Comcast could charge access fees that would then be passed on to Netflix, or use a Tier 1 network like AT&T which charged its own access fees.²⁰⁸ Comcast made clear that Netflix would have to pay Comcast an access fee if Netflix wanted to directly connect with Comcast or use third-party CDNs. In essence, Comcast sought to meter Netflix traffic requested by Comcast's broadband subscribers.

Congested interconnection points affected Netflix traffic bound for Comcast subscribers throughout 2013.²⁰⁹ In December 2013 and January 2014, however, congestion on routes into Comcast's network reached a critical threshold and Comcast's and Netflix's mutual customers were significantly harmed. Comcast subscribers went from viewing Netflix content at 720p on average (i.e., HD quality) to viewing content at nearly VHS quality.²¹⁰ For many subscribers, the bitrate was so poor that Netflix's streaming video service became unusable.²¹¹

The degraded viewing quality for Comcast subscribers also resulted in a sharp increase in calls to Netflix customer support. Those calls made clear that Comcast was well aware of the degradation of Netflix traffic and was directing its subscribers to contact Netflix.²¹²

The fact that the height of the congestion occurred in December and January is significant. December is one of Netflix's busiest times because members spend more time at

²⁰⁷ *Id.* ¶ 49.

²⁰⁸ *Id.*

²⁰⁹ *Id.* ¶ 14.

²¹⁰ *Id.* ¶ 17.

²¹¹ *Id.*

²¹² *See, e.g.,* Florance Decl. ¶ 52.

home over the holidays and therefore request more streaming video from Netflix and other OVDs.²¹³ It became clear that Comcast would continue to allow congestion across its network to negatively affect its subscribers' online video streaming experience.²¹⁴ Netflix began to view the degradation {{

}}.²¹⁵

Netflix Agrees to Pay Comcast an Access Fee for Direct Interconnection. Despite purchasing transit on all available routes into Comcast's network that did not require direct or indirect payment of an access fee to Comcast, the viewing quality of Netflix's service reached near-VHS quality levels. Faced with such severe degradation of its streaming video service, Netflix began to negotiate for paid access to connect with Comcast.²¹⁶ Netflix and Comcast eventually reached a paid agreement.²¹⁷ Within a week of that agreement, viewing quality for Netflix streaming video on Comcast's network shot back up to HD-quality levels.²¹⁸ The following graph, comparing viewing quality on Comcast's network with that of Cablevision (an Open Connect partner) demonstrates the rapid, massive improvement:

Figure 5: Video Quality

²¹³ Florance Decl. ¶ 53.

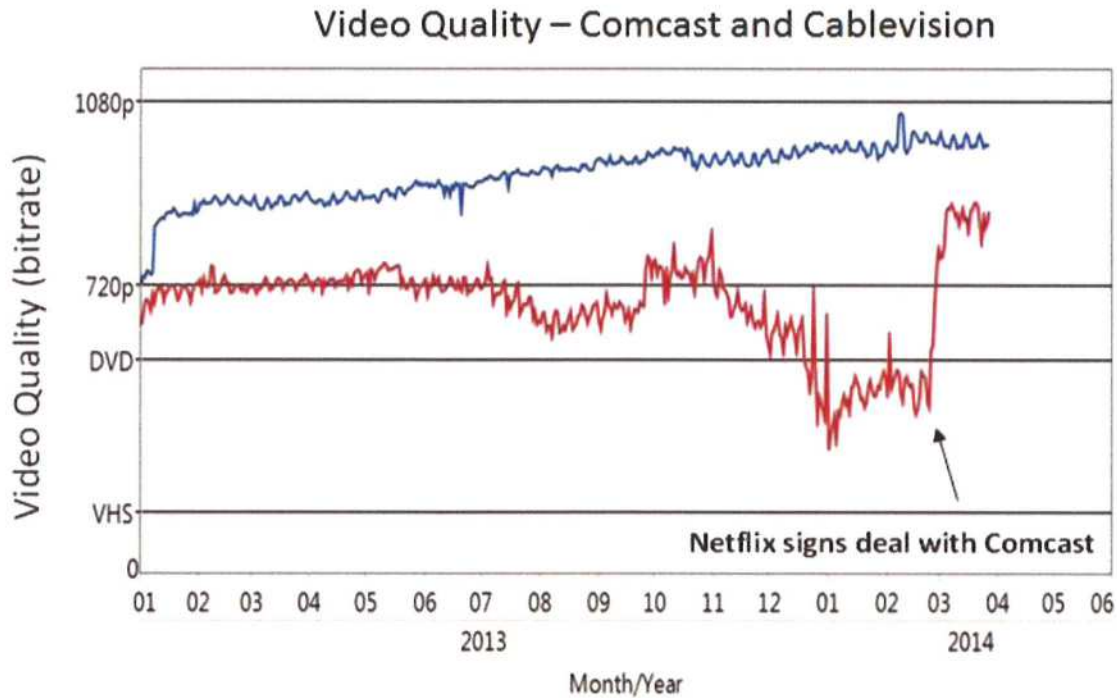
²¹⁴ *Id.*

²¹⁵ Florance Decl. ¶ 19.

²¹⁶ *Id.* ¶ 56.

²¹⁷ *Id.* ¶ 57.

²¹⁸ *Id.* ¶ 23.



Comcast was the first large terminating access network to successfully implement a “congest transit pipes” peering strategy²¹⁹ to extract direct payment from Netflix, but it is not the only one to do so. Since agreeing to pay Comcast, Netflix also has agreed to pay TWC, AT&T and Verizon for interconnection.²²⁰ {{

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Netflix is not the only edge provider to encounter Comcast’s peering strategy. In a 2011 filing with the Commission, Voxel, a hosting company relying on Tata for interconnection with Comcast’s network, noted that “[w]here broadband ISPs typically ensure that links connecting their customers to outside networks are relatively free from congestion, Comcast appears to be

²¹⁹ See NORTON at 206 (“In this tactic the ISP makes peering appear more attractive than the transit alternative.”).

²²⁰ Florance Decl. ¶ 60.

taking the opposite approach: maintaining highly-congested links between its network and external ISPs.”²²¹ The letter concludes that Comcast, through its “interconnection relations,” had “deployed an ecosystem in which hosting companies such as Voxel are effectively forced to pay Comcast to serve its broadband subscribers.”²²² In that ecosystem, “it is simply not possible for competing external providers to deliver VoIP, gaming, or streaming video services to Comcast’s broadband subscribers” without directly or indirectly paying Comcast.²²³

1. There Are No Technological, Economic, or Regulatory Impediments to Large Terminating Access Networks Pursuing Congestion Strategies

Ignoring Comcast’s recent dispute with Netflix, Applicants contend that they could not and would not congest OVD traffic coming through multiple transit routes because “Comcast needs to maintain connectivity to many Internet end points that it does not serve directly” and does so in part through “dozens of paths into its network on which huge volumes of undifferentiated traffic from millions of sources travels at any given moment.”²²⁴ Applicants’ economist develops this point further, saying that to foreclose alternative routes Comcast would have to “downgrade substantially its connectivity with the broader Internet, thus harming its broadband offering.”²²⁵

This contention is impossible to reconcile with Comcast’s actual conduct. Both Level 3 and Cogent provide Comcast with connectivity to the broader Internet and yet Comcast chose to

²²¹ Letter from Adam Rothschild, VP, Network Architecture, Voxel dot Net, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 10-56 (Jan. 11, 2011) at 1.

²²² *Id.*

²²³ *Id.* at 1-2.

²²⁴ *Applications, Public Interest Statement* at 159-60.

²²⁵ Israel Decl. ¶ 70.

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allow interconnection points with those transit providers to congest. Even at a theoretical level, Applicants overlook the fact that not all traffic to and from the broader Internet is susceptible to congestion. Email, browsing, and large static file transfers can tolerate congestion at interconnection points. Therefore, terminating access networks can pursue a congestion strategy knowing that traffic that is congestion-tolerant will not be affected. Further, its own video traffic, residing at head-ends safely within the confines of its network, is entirely immune from congestion at interconnection points. Thus, large terminating access networks can degrade streaming video and other congestion-sensitive traffic without actively differentiating the traffic coming through congested routes.

Nor are Applicants correct that “multi-homing” prevents large terminating access networks from engaging in a congestion strategy. Netflix purchased all available capacity on settlement-free transit routes into Comcast’s network and still was unable to alleviate congestion sufficiently. Moreover, many of those transit providers relied on a third party to reach Comcast’s network, meaning that by congesting one transit provider’s routes, Comcast could affect Netflix traffic flowing through multiple transit providers’ networks.

Comcast’s highly publicized dispute with Level 3 in November of 2010 took place as the Commission finalized its Open Internet rules, a version of which the DOJ incorporated into a condition placed on Comcast’s acquisition of NBC Universal,²²⁶ and Applicants now pledge to

²²⁶ Final Judgment, *United States v. Comcast Corp.*, No. 1:11-cv-00106, at 22-23 (Sept. 1, 2011). The Commission has similarly imposed as conditions of merger approval compliance with the Commission’s prior Internet policy statement, and notably, commitments by the applicants to “maintaining settlement-free peering arrangements after the merger” to alleviate potential harms caused by horizontal and vertical integration, reduction of competitors, and the threat of market “tipping” by a dominant network. *Verizon Commc’ns Inc. and MCI, Inc., Applications for Approval of Transfer of Control, Memorandum Opinion and Order*, 20 FCC Rcd. 18433, 18492, 18496 ¶¶ 109, 118 (2005) (citing *DOJ WorldCom/Sprint Complaint*, at ¶¶ 40-41).

abide by in this Transaction.²²⁷ But neither the rules themselves nor the DOJ's merger condition applies to interconnection, despite the fact that Comcast's strategy violates a core principle of network neutrality—a consumer should be able to access lawful content of her choice.

Finally, Comcast's leveraging of congestion into its network to shift Netflix to paid access agreements undercuts Applicants' argument that edge providers hold the cards in interconnection disputes. Applicants claim that edge providers "exert substantial influence and control over the quality of the end-user experience with their content at specific ISPs," and can therefore "inflict harm on an ISP's reputation and quality."²²⁸ But when Netflix's traffic was congested it did everything in its power—short of paying Comcast an access fee—to alleviate the congestion, including agreeing to deploy Open Connect Appliances at the locations of Comcast's choosing—for free. Comcast not only declined the offer, it also declined to add additional capacity at congested interconnection points.

If Applicants' economist was correct, this episode should have negatively affected Comcast's reputation and quality, causing it to immediately act to alleviate the congestion. While the episode did affect Comcast's reputation and the quality of its service,²²⁹ its behavior did not change. Despite promising its customers "blazing fast" Internet speeds, Comcast prevented those customers from receiving content at those speeds. Comcast customers experienced this degraded network performance regardless of the service tier they purchased. For example, Comcast customers paying for a broadband Internet access connection of 25 Mbps were, during the worst of the congestion, getting Netflix content at about 1.5 Mbps, and often

²²⁷ *Applications, Public Interest Statement* at 3.

²²⁸ Israel Decl. ¶ 85.

²²⁹ Israel Decl. ¶ 86.

less than that. Comcast customers paying significantly more for a 105 Mbps connection fared no better.

That Comcast customers are not getting what they pay for does not appear to move Comcast to give them what they pay for. In fact, congestion of OVD traffic can provide an opportunity for Comcast to up-sell its customers. According to an article based on more than 150 interviews with current and former Comcast employees, Comcast encourages its customer service, tech support, and other departments to make sales even when a customer is calling about a technical problem, billing issue or to downgrade her service.²³⁰ A leaked Comcast customer service manual embedded in the article recommends responding to a customer's objection that they "use Netflix to watch online" by advising her that she "should definitely sign up for at least preferred Internet to get [Netflix] with no skips."²³¹ Comcast advertised more expensive high-speed Internet packages for a consumer who wanted to watch HD video knowing that such a package would do nothing to improve the quality of Netflix video.

Even in the face of significant negative news reports over its congestion strategy²³² Comcast was able to let congested network conditions persist without fear of losing customers

²³⁰ Adrienne Jeffries, *Employee Metrics Show How Comcast Pushes Customer Service Reps to Make Sales*, The Verge (Aug. 19, 2014), available at <http://www.theverge.com/2014/8/19/6028059/training-materials-show-how-comcast-pushes-customer-service-reps-to>.

²³¹ *Id.* (citing Comcast Quality Guidelines Repair, Comcast, at 13 (Nov. 14, 2013), available at http://www.scribd.com/fullscreen/237058724?access_key=key-01X4mIflAPCvW2qlzoc&allow_share=true&escape=false&view_mode=scroll).

²³² See, e.g., Joan E. Solsman, *Cogent: Comcast Forced Netflix with Clever Traffic Clogging*, CNET (May 8, 2014), <http://www.cnet.com/news/cogent-says-comcast-forced-netflix-interconnection-deal-with-clever-traffic-clogging/>; Haley Sweetland Edwards, *The Great Comcast vs. Netflix Battle Begins Anew*, TIME (Apr. 22, 2014), available at <http://time.com/71688/the-great-comcast-vs-netflix-battle-begins-anew/>; Harold Feld, *Netflix CDN v. The Cable Guys or "Comcast v. Level 3 Part Deux—Peering Payback!"*, Public

due to its market power in local high-speed broadband markets and because customers faced high switching costs. This undermines Applicants' claims that they face serious competition for high-speed broadband customers. Comcast refused to address the problems its customers experienced until Netflix paid. Neither Applicants nor their economist explains why a strategy they do not believe is theoretically possible was so easy for Comcast to undertake in practice.

Without any recourse to address this conduct, an edge provider's only way to mitigate congestion is a direct or indirect payment to the terminating access network. In the case of transit providers or CDNs, the fee takes the form of payment to add additional capacity. That fee then may be passed to edge providers and possibly back to the terminating access network's customer, through the edge provider. In the case of an OVD operating its own CDN, the payment can take the form of a payment to the terminating access network to peer directly with the OVD's CDNs located either at an interconnection point or within the ISP's last-mile network. In either case, the edge provider pays a direct or indirect fee to terminate traffic on the network.

2. Marginal Costs of Interconnection Do Not Justify Terminating Access Fees

Applicants' economist justifies paid peering arrangements as an efficient mechanism to recover the marginal costs that edge providers impose on a network: "[I]t is economically efficient for ISPs to charge edge providers for the marginal costs that they impose on the ISPs' networks: If edge providers do not fully internalize the costs they impose on the network; they will be incentivized to overprovide data relative to the socially optimal level."²³³ This argument

Knowledge (Jan. 17, 2013), <https://www.publicknowledge.org/news-blog/blogs/netflix-cdn-v-cable-guys-or-comcast-v-level-3>.

²³³ Israel Decl. ¶ 75 n.105.

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both overstates the marginal costs of adding capacity or delivering traffic over last-mile networks and misstates the role of edge providers in delivering traffic to end users who request it.

There are two types of marginal costs incurred by the delivery of additional traffic over existing routes: (1) the cost of providing additional capacity at interconnection points; and (2) transport costs—the marginal cost of delivering traffic from the interconnection point over the last mile. Estimations of marginal cost of adding capacity at the interconnection point can vary. In its dispute with Level 3, Comcast contended that adding a new port at an interconnection point “involves capital costs of about \$50,000 and ongoing recurring costs of about \$25,000 a year.”²³⁴ By contrast, transit providers maintain that the “the cost of augmenting interconnection . . . is nominal and not an issue”—effectively the cost of running wire from one port to another or, at most, adding a new network module.²³⁵ In Netflix’s experience, the cost of adding a new port is less than \$10,000 and is amortized over three to five years.²³⁶ In any event, Level 3 contends that “[t]he costs of physical interconnection facilities do not come near to accounting for the amount of tolls sought by the large mass-market retail ISPs.”²³⁷

When transit providers offer to share those costs without agreeing to paid interconnection, large terminating access networks are uninterested. Recently, Cogent offered to

²³⁴ Letter from Joseph W. Waz, Jr., Senior Vice President, External Affairs and Public Policy Counsel, Comcast Corp., and Lynn R. Charytan, Vice President, Legal Regulatory Affairs, Comcast Corp. to Sharon Gillett, Chief Wireline Competition Bureau, Federal Communications Commission, GN Docket No. 09-191, at 3 n.4 (Nov. 30, 2010).

²³⁵ Comments of Level 3 Communications, LLC, Protecting and Promoting the Open Internet, GN Docket No. 14-28, at 12 (Jul. 15, 2014).

²³⁶ Florance Decl. ¶ 46.

²³⁷ *Id.*

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pay the capital costs required for Verizon, Comcast, AT&T, and TWC to upgrade their connections with Cogent.²³⁸ Each of those ISPs refused.

The other potential marginal cost associated with additional traffic is transport from the interconnection point over the last mile. Marginal transport costs, however, increase only if there is insufficient capacity to deliver the additional traffic—requested by the ISP’s customer—over the last mile. Such an event should not occur because the ISP’s customer has already paid for Internet connection at very particular speeds. Comcast subscribers, after all, do not purchase 105 Mbps broadband connections just to send email or surf the web. They purchase high-speed broadband to use that capacity to its fullest—likely to consume rich media content, including streaming video. Any purported marginal cost of delivering additional traffic over the last mile—the precise traffic requested by an ISP’s customer—already has been paid for by the customer.

There is scant evidence that Comcast faces any transport capacity constraints. In 2010, the same year that Comcast de-peered and began demanding access fees from CDNs and transit providers carrying Netflix traffic, Comcast touted the additional capacity freed by moving to an all-digital platform—which allowed for better video quality—as one of Comcast’s chief competitive advantages:

Once you go All-Digital you free up a lot of capacity. And there’s no question in our minds that we have plenty of capacity to continue to increase broadband speeds in advance, as we have been doing . . . for the applications that are there for them . . . [W]e have so much capacity right now we’re actually looking for

²³⁸ Press Release, Cogent, Cogent Offers to Pay Capital Costs Incurred by Major Telephone and Cable Companies Necessary to Ensure Adequate Capacity (Mar. 21, 2014), <http://www.cogentco.com/en/news/press-releases/631-cogent-offers-to-pay-capital-costs-incurred-by-majortelephone-and-cable-companies-necessary-to-ensure-adequate-capacity>.

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bandwidth intensive uses like 3-D video and high-def[inition] video and other kinds of things and do whatever we can to stimulate that market . . . once you make that [digital] conversion I think we're going to have plenty of capacity for years and years to come.²³⁹

The presence of that additional capacity was on display once Netflix reached its direct interconnection agreement with Comcast. If Comcast's last-mile infrastructure was insufficient to carry the additional Netflix traffic, Comcast likely would have needed time to build out additional capacity. As it was, Netflix performance improved dramatically within a week of its agreement with Comcast.²⁴⁰ Indeed, if the marginal cost of delivery over the last mile were of great concern, large terminating access networks could do what smaller terminating access networks have done—place Open Connect appliances in their networks to facilitate traffic delivery with as little burden on the network as possible.

Whether it uses Open Connect or a third-party transit provider, Netflix, not Comcast, bears the brunt of delivering traffic to the terminating access network. Comcast has suggested that Netflix's payments to Comcast have allowed Netflix to cut out the "transit middleman" and save costs.²⁴¹ But for edge providers such as Netflix, paying a terminating ISP like Comcast for interconnection is not the same as paying for Internet transit. Transit networks like Level 3, XO, Cogent, and Tata perform two important services: (1) they carry traffic over long distances; and (2) they provide access to every network on the global Internet. Comcast does not carry Netflix

²³⁹ Statement of Michael J. Angelakis, Chief Financial Officer, Comcast Q1 2010 Earnings Conference Call, at 11 (Apr. 28, 2010), *available at* http://files.shareholder.com/downloads/CMCSA/0x0x369983/b570d2cb-0262-49c6-adeb-e2a04c065b5e/Comcast_Q110Transcript_4.28.10.pdf.

²⁴⁰ Florance Decl. ¶ 58.

²⁴¹ Amadou Diallo, *Comcast Pitches Merger to Senate, Boosts Download Speeds*, *Forbes* (Apr. 9, 2014), <http://www.forbes.com/sites/amadoudiallo/2014/04/09/senate-hearing-opens-debate-on-comcast-merger/>.

traffic over long distances. It does not provide storage for that content. It does not connect Netflix to other networks. Rather, Netflix incurs the cost of moving Netflix content long distances and storing it closer to the consumer, not Comcast. The only thing Netflix pays Comcast for is access to its network.

3. Traffic Ratios Do Not Justify Payment of Terminating Access Fees

Comcast also has attempted to explain its pattern of congestion and demand for payment as nothing more than a natural consequence of well-established peering policies.²⁴² But Comcast's stated peering policy is wholly at odds with the architecture of its residential broadband network and with the flow of traffic that Comcast's customers request over that network. Comcast's peering policy requires that the prospective peer "maintain a traffic scale between its network and Comcast that enables a general balance of inbound versus outbound traffic."²⁴³ Comcast has explained that "general balance" translates to a ratio of roughly 2:1 inbound versus outbound traffic.²⁴⁴ But that policy is impossible to reconcile with the way that Applicants sell Internet access to their end users. Aside from the lowest-tier economy plans, none of those packages offers downstream and upstream speeds in ratios that are anything less than 5:1. For example, Comcast offers the following packages in the Washington DC Metro/Tri-County/NVA Market:

²⁴² Letter from Joseph W. Waz, Jr., Senior Vice President, External Affairs and Public Policy Counsel, Comcast Corp., to Sharon Gillett, Chief, Wireline Competition Bureau, Federal Communications Commission, GN Docket No. 09-191 (Nov. 30, 2010).

²⁴³ *Comcast Settlement-Free Interconnection (SFI) Policy*, Comcast (October 2013), available at <http://www.comcast.com/peering> (last visited Aug. 23, 2014).

²⁴⁴ Letter from Joseph W. Waz, Jr., Senior Vice President, External Affairs and Public Policy Counsel, Comcast Corp., to Sharon Gillett, Chief, Wireline Competition Bureau, Federal Communications Commission, GN Docket No. 09-191, at 2 (Nov. 30, 2010).

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Economy Plus:	3.0 Mbps/768 Kbps
Performance Starter:	6 Mbps/1 Mbps
Performance:	25 Mbps/5 Mbps
Blast:	105 Mbps/10 Mbps
Extreme 150:	150 Mbps/20 Mbps ²⁴⁵

This disparity between downstream and upstream speeds reflects a fundamental characteristic of residential customers' demand for Applicants' broadband service: the terminating access network's subscribers use it to request far more traffic than they send. Edge providers merely provide the content that those customers demand—they do not send unsolicited traffic.²⁴⁶ Traffic ratios are imbalanced because an ISP's customers are using broadband service for precisely the reasons that they purchased it. Claiming that edge provider traffic causes congestion at the interconnection points overlooks the role of the terminating access network in facilitating the request to bring the traffic there in the first place.

Peering policies requiring balanced traffic ratios also are fundamentally inconsistent with the dominant form of traffic that customers of terminating access networks' request. At present, streaming video accounts for more than half of all peak-time downstream Internet traffic and nearly 47 percent of aggregate upstream and downstream Internet traffic.²⁴⁷ This all but ensures that transit routes carrying video traffic eventually will fall out of ratio. "Internet video tends to be massively asymmetric (as high as 30:1), and . . . Comcast customers consist of tens of

²⁴⁵ Letter from Lynn R. Charytan, Senior Vice President, Regulatory Affairs, Senior Deputy General Counsel, Comcast Corp., to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 10-56, Ex. A at 3 (July 25, 2014), *available at* <http://apps.fcc.gov/ecfs/document/view?id=7521736056>.

²⁴⁶ Comments of Level 3 Communications, LLC, Protecting and Promoting the Open Internet, GN Docket No. 14-28, at 13 (July 15, 2014) ("Streaming video sites are not like telemarketers.").

²⁴⁷ Sandvine, Global Internet Phenomena Report: 1H 2014, at 6 (2014), *available at* <https://www.sandvine.com/downloads/general/global-internet-phenomena/2014/1h-2014-global-internet-phenomena-report.pdf>.

millions of eyeballs primarily pulling down content from the Internet.”²⁴⁸ Comcast’s 2:1 ratio necessarily allows Comcast to congest and raise costs for content-heavy traffic, and specifically OVD traffic requested by its own subscribers.

Ratio-based peering policies provide Comcast and other large terminating access networks with a convenient—albeit arbitrary—rationale for “de-peering” with a transit provider or CDNs as their broadband subscribers’ demand for content ensures that traffic ratios remain out of balance.²⁴⁹ As soon as the 2:1 threshold is crossed, the terminating access network can cite its peering policy, de-peer the transit provider or CDN carrying the inbound traffic, or allow ports to congest and demand payment to relieve congestion. Because Comcast can control which routes it uses to send traffic out of its network, it has a high degree of control over the traffic ratios of interconnecting transit providers.

Ultimately, the fees that edge providers pay either directly or indirectly to large terminating access networks, such as Comcast, are nothing more than terminating access fees. Sitting between the edge providers and the “eyeballs” they depend on, Comcast can exercise its market power to leverage congestion at interconnection points to ensure that—whether directly or indirectly—it receives payment from the edge provider trying to reach its captive customers.

²⁴⁸ William B. Norton, *The 21st Century Peering Ecosystem*, DrPeering International (2014), available at <http://drpeering.net/core/ch10.2-The-21st-Century-Internet-Peering-Ecosystem.html>. “Since 80% of Internet traffic is destined to be video, a large and massively asymmetric stream, the peering ratios clauses will prevent settlement-free peering from happening for 80% of the Internet traffic. Anyone with video content to send to the eyeballs will not qualify for free peering.” NORTON at 146. The 80% figure is for the share of video traffic globally.

²⁴⁹ To further highlight the arbitrariness of ratio reliance, an OVD technically could keep its traffic in ratio simply by requesting that a subscriber send a bit upstream for every bit sent downstream. This would of course be an extremely inefficient use of the network, but technically would bring traffic into compliance with the ISP’s peering policy. Reed Hastings, *Internet Tolls and the Case for Strong Net Neutrality*, Netflix US & Canada Blog (Mar. 20, 2014), available at <http://blog.netflix.com/2014/03/internet-tolls-and-case-for-strong-net.html>.

Because consumers have few high-speed broadband alternatives and face high switching costs, Comcast's market power over edge providers is unrestrained. By leveraging congestion at interconnection points, Comcast can force content-heavy edge providers to pay: not for transit, nor for storage, just for access.

D. Comcast Already Has Used Data Caps and Restrictions on User Devices to Harm OVDs and Consumers

Aside from restricting OVDs at the point of interconnection, Comcast also has used data caps and restrictions on user devices to restrict its own consumers' ability to reach OVDs. Much as Comcast leverages interconnection to control OVDs' access to its subscribers, data caps and device restrictions allow Comcast to control its customers' access to OVDs.

1. Comcast Already Has Used Data Caps to Push Consumers Away from OVDs

Data caps are unpopular with consumers because they impose an extra cost on broadband use to access bandwidth-intensive content such as streaming video. For the same reason, the data caps are a tool to discourage subscribers from accessing unaffiliated, or unsubsidized, streaming video content.²⁵⁰

For light users of the Internet, data caps may go unnoticed. But data caps could be a problem for those who rely on OVDs for a significant portion of their video entertainment, and a strict application of data caps can place a hard limit on TV watching. This problem becomes particularly acute with next-generation services, such as Ultra4K HD, through which consumers

²⁵⁰ While Comcast currently does not enforce its data cap outside of a few trial markets, Comcast Executive Vice President David Cohen recently predicted "that in 5 years Comcast at least would have a usage-based billing model rolled out across its footprint." See Edited Transcript: CMCSA Comcast Corporation at MoffettNathanson Communications Summit, Thompson Reuters StreetEvents, at 13 (May 14, 2014), *available at* <http://files.shareholder.com/downloads/CMCSA/3168999141x0x754850/059910f6-e9e0-4ec8-b2c2-05cabdfcc644/Comcast%20at%20MoffettNathanson%20Transcript.pdf>.

can easily hit their data caps with normal data use and one long weekend binge watching *House of Cards* in Ultra 4K HD.²⁵¹ Even for consumers who use OVDs for more modest video consumption, data caps can introduce anxiety over the potential for extra charges and can cause consumers to ration their viewership of OVDs.²⁵²

Data caps have provided Comcast with a means of pushing users to substitute its own affiliated content for OVD content by exempting their affiliated content and services from the data cap. For example, when Comcast launched its Xfinity Xbox streaming video app in 2012, it exempted that service from its then-applicable 250 gigabyte cap.²⁵³ And Comcast continues to publicly state that its own services are not subject to the data cap.²⁵⁴

²⁵¹ Leslie Horn, *You Can Burn Through Your Entire Broadband Data Cap in One Long Weekend*, Gizmodo (Feb. 18, 2014), <http://gizmodo.com/you-can-burn-through-your-entire-broadband-data-cap-in-1524579598>.

²⁵² See generally Marshini Chetty et al., *'You're Capped!' Understanding the Effects of Bandwidth Caps on Broadband Use in the Home*, Microsoft Research and Georgia Inst. Tech (May 5, 2012), available at http://research.microsoft.com/pubs/162079/YourCapped_HomeBroadbandUseUnderCaps_CHI2012.pdf (finding consumer anxiety related to bandwidth caps was related to uncertainty about which applications consumed the most bandwidth and multiple users on a plan using up allotted data and caused users to limit their usage habits).

²⁵³ Stacey Higginbotham, *The Technical and Legal Realities of Comcast's Xbox Cap Spat*, Gigaom (Mar. 27, 2012), available at <http://gigaom.com/2012/03/27/the-technical-and-legal-realities-of-comcasts-xbox-cap-spat/>. After a public uproar, Comcast suspended data caps entirely. Andrew Feinberg, *Comcast to Suspend Data Cap After Xbox Controversy*, The Hill (May 17, 2012), available at <http://thehill.com/policy/technology/228099-comcast-to-suspend-data-cap-after-xbox-controversy>. Comcast did state that it would experiment with data caps on a trial basis. Those trials are ongoing in 13 markets. *Questions & Answers About Our New Data Usage Plan Trials*, Comcast (May 29, 2014), <http://customer.comcast.com/help-and-support/internet/data-usage-trials>.

²⁵⁴ See *FAQs: Xbox 360*, Comcast, <http://xbox.comcast.net/faqs.html> (last visited Aug. 23, 2014) (“Will watching XFINITY TV directly on my Xbox 360 use data from my XFINITY Internet monthly data usage allowance? No; similar to traditional cable television service that is delivered to the set-top box, this content doesn’t count toward our data usage threshold. The Xbox 360 running our XFINITY TV app essentially acts as an additional cable box for your existing cable service, and our data usage threshold does not apply.”).

Due to lack of competition and high switching costs, Comcast enjoys substantial discretion in setting the initial cap and determining when it should be raised or lowered. With its own content exempted, Comcast is able to use data caps to shape the viewing habits of consumers away from non-affiliated services and toward its own. For that reason, cord-shavers and cord-cutters are hardest hit by data caps. As Brian Barrett of Gizmodo has explained:

That's where broadband data caps are truly insidious; you may be able to escape your monthly cable bill, but you're still stuck paying Comcast for access to the internet that powers your Hulu Plus, Aereo, Netflix smorgasbord. And because Comcast presumably knows how math works, the caps will be just low enough, the penalties just high enough, and the 12-month introductory bundle offers just appealing enough that cord-cutting no longer makes financial sense for you. It'll be the same money, going to the same company, with a few extra monthly subscriptions thrown in for good measure.²⁵⁵

Moreover, because users may not have a clear sense of how much streaming video or other rich media content may cost them, they generally would be less likely to engage with existing OVDs or experiment with new services.

2. Comcast Already Has the Ability to Leverage Control of Devices to Control Content Distribution

Comcast's control over set top boxes—both its own and those of others—also represents a significant ability to foreclose OVDs. While many users still enjoy OVD services through personal computers, increasingly they rely on other devices to connect their chosen OVD to their television. Comcast enjoys exclusive control over the most ubiquitous of those devices—the set top box—and it has demonstrated the ability to inhibit OVDs from accessing third-party devices, such as Roku.

²⁵⁵ Brian Barrett, *How Comcast-TWC Will End Your All-You Can Internet Buffet*, Gizmodo, (Feb. 16, 2014), <http://gizmodo.com/how-comcast-twc-will-end-your-all-you-can-internet-buff-1523899968>.

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Ninety-nine percent of cable subscribers lease set-top boxes from their cable operators, creating a \$7 billion revenue stream for those operators.²⁵⁶ Comcast has declared that it “has the most advanced set-top box and video platform (X1)” among cable operators,²⁵⁷ and that it is working to place those boxes in every subscriber’s home.²⁵⁸ The X1 platform and set-top box provide Comcast with a means of unifying consumers’ entertainment and home automation needs, integrating linear video, VOD and TV Everywhere libraries, and social media on a single device and interface. This integration makes it much more convenient for consumers to access IP-delivered streaming services on their computers but only for affiliated content and apps that Comcast has allowed onto the platform and set-top box.

This integration gives affiliated streaming services, or unaffiliated ones that bargain their way onto the X1 platform, a substantial advantage over those that cannot be accessed through the X1 set-top box. Absent placement on that platform, a Comcast customer must rely on another device or smart-TV to access the content. Coupled with Comcast’s use of interconnection and data caps to restrict viewership of OVDs, restricting OVDs from presence on a set top box can create a powerful incentive for consumers to switch OVDs, particularly to Comcast’s. As a result, should the X1 set-top box become the primary interface through which a significant portion of broadband access subscribers view video content, an OVD’s absence from the set-top box may undermine its ability to reach or retain its audience.

²⁵⁶ Letter from Henry Goldberg, Attorney for TiVo, Inc., and Devendra T. Kumar, Attorney for TiVo, Inc. to Marlene H. Dortch, Secretary, Federal Communications Commission, CS Docket NO. 97-80, at 1 (Mar. 27, 2014).

²⁵⁷ Israel Decl. ¶ 11.

²⁵⁸ See Marcien Jenckes, *Comcast Voices: Next Generation X1 Experience Expanding to New Markets*, Comcast (Feb. 12, 2013), <http://corporate.comcast.com/comcast-voices/next-generation-x1-experience-expanding-to-new-markets>.

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Comcast also can leverage its market power to inhibit third-party content on third-party devices. Currently, Comcast does not allow subscribers to access HBO Go through the popular Roku device.²⁵⁹ This may prevent some Comcast subscribers from enjoying HBO's OVD offering and also pushes those same users toward using Comcast's own set top box to access HBO content on demand. By restricting popular content providers from fully utilizing these devices, Comcast effectively makes both unaffiliated services and unaffiliated devices less useful and thus less popular than they might otherwise be.

VI. THE TRANSACTION WOULD INCREASE COMCAST'S EXISTING INCENTIVE AND ABILITY TO HARM OVDs BY CREATING AN EVEN LARGER TERMINATING ACCESS NETWORK

This Transaction poses nearly identical competitive concerns to those identified by the Commission and the DOJ in *AT&T-MediaOne*. But the proposed Transaction takes place with significantly greater levels of cable system consolidation than was the case in 2000 (and complete rather than partial ownership of broadband Internet service, as was the case in *AT&T-MediaOne*). Furthermore, it carries more profound risks of anticompetitive harm given the ever-increasing significance of online video in the intervening fourteen years.²⁶⁰ Applicants are two of four large terminating access networks that have exercised their market power by leveraging their subscriber bases to extract access fees from OVDs and the only two to do so who are not

²⁵⁹ Jeff Baumgartner, *Next TV: Comcast Testing TV Everywhere Authentication On Apple TV, Roku Devices*, Multichannel News (Mar. 19, 2014), <http://www.multichannel.com/news/content/next-tv-comcast-testing-tv-everywhere-authentication-apple-tv-roku-devices/355885>.

²⁶⁰ The FCC acknowledged the importance of OVD services in its *Fourteenth Video Competition Report* by dedicating an entire new category to online video. The Commission explained that Internet-based distribution of video had already “undergone dramatic transformation,” and was “evolving from a niche service into a thriving industry.” Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, *Fourteenth Video Competition Report*, 27 FCC Rcd. 8610, 8720, 8734 ¶¶ 237, 276(2012).

technically Tier 1 networks. The Transaction would give Applicants control of access to 35.5 percent of all fixed broadband subscribers and [[]] of the national market for high-speed distribution of edge provider content.²⁶¹ Such concentration would give the combined entity increased market power, which would result in three distinct but interrelated harms to OVDs.

First, Comcast's existing ability to extract access fees—evidenced by its thousands of paid interconnection agreements—would extend to TWC's network, which edge providers, transit providers, and CDNs currently reach through [[]] settlement-free routes and only [[]] paid connections.²⁶² Second, by controlling access to nearly 28 million residential broadband subscribers,²⁶³ the combined entity would be able to foreclose OVDs to an unprecedented degree, making it significantly more difficult—if not impossible—for OVDs to achieve and maintain the critical mass necessary to place competitive pressure on the combined entity's affiliated video offerings. Finally, the combined entity's market power combined with its demonstrated ability to exercise that market power by migrating edge providers, CDNs, and transit providers from settlement-free to paid routes into its network would give it an unprecedented ability to raise the costs of rival OVDs. Common sense, empirical evidence, and sound economic theory all demonstrate that large terminating access networks can—and do—

²⁶¹ Letter from Kathryn A. Zachem, SVP, Regulatory and State Legislative Affairs, Comcast Corp., Catherine Bohigian, EVP, Government Affairs, Charter Commc'ns Inc., and Steve Teplitz, SVP, Government Relations, Time Warner Cable Inc., to Marlene H. Dortch, Federal Communications Commission, MB Docket No. 14-57, at 5 (June 27, 2014).

²⁶² Israel Decl. ¶ 78.

²⁶³ Letter from Kathryn A. Zachem, SVP, Regulatory and State Legislative Affairs, Comcast Corp., Catherine Bohigian, EVP, Government Affairs, Charter Commc'ns Inc., and Steve Teplitz, SVP, Government Relations, Time Warner Cable Inc., to Marlene H. Dortch, Federal Communications Commission, MB Docket No. 14-57, at 2 (June 27, 2014).

exercise their market power by charging edge providers access fees to reach their subscribers and that larger terminating access networks charge more.

Any one of these merger-specific harms would pose a significant threat to edge providers that rely on uncongested access to broadband subscribers. Collectively, they would enable foreclosure and raising-rival-cost strategies that would allow the combined entity to dictate both the cost and quality of OVDs' access to end users. Further, those harms will be accompanied by data-cap and set-top box policies and practices that could foreclose OVDs to a larger set of subscribers.

A. The Transaction Would Extend Comcast's Ability to Harm OVDs to TWC's Network

A certain result of this Transaction is that content providers—including OVDs—currently serving TWC's customers would face a new threat of congestion or increased costs. {{

}} Nor is TWC as capable as

Comcast of leveraging congesting to monetize access to its end users. [[

]] By contrast, Comcast has “8,000 commercial arrangements, which include dozens of substantial paid peering and transit arrangements with CDNs, ISPs and major content providers which bring content to Comcast's ISP network for delivery to Comcast's

²⁶⁴ See Evans Decl. ¶ 141 (“All else being equal, I would expect that ISPs with greater bargaining leverage, owing to their ability to foreclose an OVD from reaching a larger portion of wired subscribers, would be able to demand and receive higher prices for reaching each of their subscribers.”).

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customers.”²⁶⁵ So, while Comcast has about 200 paid connections to its network for every one settlement-free route, [[]] TWC thus has a greater incentive than Comcast to manage settlement-free routes into its network and upgrade or allocate capacity as needed.

The Transaction would change that incentive, allowing the combined entity to shift traffic currently flowing over settlement-free connections to TWC’s network onto Comcast’s paid access connections. The combined entity also would likely default to the same practice of aggressive enforcement of settlement-free peering policies with transit and edge providers—the hallmark of Comcast’s network management. This creates a risk for both transit providers that currently interconnect with TWC’s network and edge providers that rely on those transit providers. As settlement-free routes into TWC’s network exceed traffic ratios, the combined entity would pressure edge providers to transition to a transit provider or CDN that pays a terminating access fee or to pay an access fee to interconnect directly with the combined entity. That pressure would extend to transit providers as the combined entity would seek payment for transit over TWC’s formerly uncongested, settlement-free routes or pressure transit providers to stop accepting traffic from content-heavy edge providers delivering traffic requested by the combined entity’s own subscribers. Here again, OVDs and other content-heavy edge providers would have no choice but to transition to a paid route into the combined entity’s network. One option newly available to OVDs serving TWC would be Comcast’s recently launched

²⁶⁵ *Competition in the Video and Broadband Markets: The Proposed Merger of Comcast and Time Warner Cable: Oversight Hearing Before the Subcomm. on Regulatory Reform, Commercial and Antitrust Law of the H. Comm. on the Judiciary*, 113th Cong. 41 (Joint Written Statement of David L. Cohen, Executive Vice President, Comcast Corp., and Robert D. Marcus, Chairman & Chief Executive Officer, Time Warner Cable Inc.).

proprietary CDN, which allows edge providers—for a fee—“to bypass network middlemen and deliver their services directly to Comcast Internet customers.”²⁶⁶

The combined entity would be better able to leverage congestion to raise the cost of interconnection while relaying on its numerous settlement-free relationships with Tier 1 networks to limit its own exposure to congestion. As a result, OVDs would face additional pressure to use Comcast’s CDN service, pay for direct interconnection, or simply accept significantly increased fees passed through from the transit or CDN provider in order to relieve the congestion.²⁶⁷ With respect to the combined entity’s network, the debate over whether settlement-free peering or paid interconnection is the norm would be settled. And because the combined entity’s network would be the sole means of access to nearly 28 million fixed-broadband subscribers, the outcome of that debate would have serious ramifications in the market for national high-speed broadband distribution of edge provider content.

B. The Sheer Size of the Combined Entity Would Threaten OVDs

Just as in *AT&T-MediaOne*, this Transaction would dramatically and fundamentally alter the national market for high-speed distribution of edge provider content in a way that directly threatens the continued profitability—if not viability—of many OVDs. In *AT&T-MediaOne*, the

²⁶⁶ Amir Efrati, *As TV Battles Heat Up, Comcast Launches New Web Deliver Service*, The Information (May 19, 2014) (subscription required).

²⁶⁷ “When a single network grows to a point at which it controls a substantial share of the total Internet end user base and its size greatly exceeds that of any other network, network externalities may cause a reversal of its previous incentives to achieve efficient interconnection arrangements with its rival networks. In this context, degrading the quality or increasing the price of interconnection . . . can create advantages for the largest network in attracting customers to its network. . . . This, in turn, enables the dominant network to further raise its rivals’ costs, thereby accelerating the tipping effect. As a result of an increase in their costs, rivals may not be able to compete on a long-term basis and may exit the market.” *DOJ WorldCom/Sprint Complaint* at 18 ¶ 41.

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DOJ's competitive concerns focused on the increased market power that AT&T would be able to exercise over content providers whose services required national distribution and broadband-level speeds, such as the delivery of high-quality streaming video to consumers.²⁶⁸ The DOJ emphasized that AT&T's increased market power would stem from the cost structure of "residential broadband content"—high fixed costs that do not vary with the number of subscribers.²⁶⁹ Given this cost structure, the DOJ explained, OVDs require national distribution to maximize the potential number of consumers they will reach, thereby maximizing their revenue opportunities.²⁷⁰

The DOJ was concerned that AT&T could use its increased market power to foreclose OVDs through its power to "promote or retard the success of individual content providers . . . [b]y exploiting its 'gatekeeper' position in the residential broadband content market AT&T could make it less profitable for unaffiliated or disfavored [services] to invest in the creation of attractive broadband content, and thereby reduce the quantity and quality of content available."²⁷¹ The DOJ further noted that AT&T could exercise this market power because broadband content providers depended on effective and efficient data delivery to provide an attractive viewing experience for their users, and the efficient distribution of content could "heavily influence their success or failure."²⁷²

As was the case in *AT&T-MediaOne*—where the two companies accounted for approximately 40 percent of residential broadband subscribers—this Transaction would result in

²⁶⁸ *AT&T-MediaOne Complaint* at 8 ¶ 21-22.

²⁶⁹ *Id.* at 9 ¶ 23.

²⁷⁰ *Id.*

²⁷¹ *Id.* at 13 ¶ 34.

²⁷² *Id.* ¶ 28.

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significant broadband consolidation at a national level. The combined entity's 35.5% share of the fixed broadband market is by itself significant.²⁷³ But when viewed in terms of services capable of delivering rich media content offered by OVDs, the combined entity's market share is significantly larger.²⁷⁴ And OVDs with high-fixed costs continue to be vulnerable to concentration in the national broadband content distribution market. Given the significant fixed costs of OVDs offering long-form video, heavily congested routes to nearly half of an OVD's high-speed broadband subscribers could seriously jeopardize its profitability and even its viability. As Netflix's expert economist, Dr. David Evans, explains, the proposed Transaction would "significantly increase Comcast's ability to impose harm on OVDs by increasing the number of subscribers to whom Comcast could significantly reduce quality of streaming services and thereby impose potentially debilitating losses of revenue on OVDs."²⁷⁵

The potential size of the foreclosure is more than just competitively significant. Degradation can lead to decreased usage, which in turn can lead to decreased subscriber retention.²⁷⁶ Fixed-cost OVDs can be highly sensitive to subscriber retention, making any decrease in subscribership significant. Degraded connections to an ISP the size of the combined entity could pose a substantial threat to an OVD's profitability.²⁷⁷ {{

²⁷³ Letter from Kathryn A. Zachem, SVP, Regulatory and State Legislative Affairs, Comcast Corp., Catherine Bohigian, EVP, Government Affairs, Charter Commc'ns Inc., and Steve Teplitz, SVP, Government Relations, Time Warner Cable Inc., to Marlene H. Dortch, Federal Communications Commission, MB Docket No. 14-57, at 5 (June 27, 2014).

²⁷⁴ See Mark Cooper, *Buyer and Bottleneck Market Power Make Comcast-Time Warner Merger "Unapprovable"*, Consumer Federation of America, at 6 (2014).

²⁷⁵ Evans Decl. ¶ 31.

²⁷⁶ Florance Decl. ¶56.

²⁷⁷ Even temporary degradation can lead to harmful subscriber diversion and loss. See Applications for Consent to the Assignment and/or Transfer of Control of Licenses Adelphia

Comme’ns Corp., to Time Warner Cable Inc., to Comcast Corp., Comcast Corp. to Time Warner Inc., Time Warner Inc. to Comcast Corp., *Memorandum Opinion and Order*, 21 FCC Rcd. 8203, 8257 ¶ 119-21 (2006) (explaining a “change in the characteristics of the downstream product, causing some customers to shift to competing downstream products” makes foreclosure through withdrawal of critical inputs profitable).

²⁷⁹ Evans Decl. ¶ 140.

unprecedented and unrivaled pressure on fixed-cost OVDs to move off of congested settlement-free transit routes and onto toll roads.

Although OVDs with fixed content costs are more susceptible to foreclosure strategies than those paying variable costs, neither is immune. OVDs with variable fee structures would likely respond to foreclosure by reducing some of their costs. In Dr. Evans' estimation, "these OVDs would either lose out on future content deals or have to make fixed-price guarantees since content providers would recognize that the fees they expect would be smaller."²⁸⁰ Regardless of fee structure, foreclosure would threaten the virtuous circle whereby new subscribers drive new investment in content that in turn attracts new subscribers.

The success or failure of an edge provider could be dramatically affected, if not decided outright, by whether and under what terms it is able to reach its end users over a broadband network that serves such a large percentage of America. The ability to obtain information and services without being hampered or held up by a third-party terminating access network creates immense opportunity—for edge providers like Netflix and for the next Netflix—because it creates a level playing field on which better ideas, products, and services can prevail over better-funded or better-connected—or merely incumbent—video competitors. As the DOJ recognized in *AT&T-MediaOne*, by undermining OVD profitability, the combined entity would be able to precipitate a downward spiral in the ability of OVDs to compete. As the combined entity made OVDs less profitable, they would have less ability "to invest in the creation of attractive broadband content," which in turn "reduce[s] the quantity and quality of content available."²⁸¹ From the Applicants' perspective, this reduction in output is a powerful reason for the

²⁸⁰ Evans Decl. ¶ 134.

²⁸¹ Complaint, *United States v. AT&T*, No. 1:00-cv-01176, 12-13 ¶ 34 (D.D.C. May 25, 2000).

Transaction. Thus, what in *AT&T-MediaOne* was a plausible potential scenario, in this Transaction is a concrete means for protecting Applicants' incumbent market power.

C. The Transaction Would Give the Combined Entity an Increased Ability to Raise OVDs' Costs

As explained above, if the Transaction were approved, the unparalleled size of the combined entity would pose a serious threat to OVDs. That threat would give the combined entity the ability to extract disproportionately higher terminating access fees. OVDs would be left with no choice but to buy their way out of congested routes into a network that would account for [[]] of an OVD's potential high-speed broadband customers. Again, this Transaction mirrors *AT&T-MediaOne*, where the DOJ concluded that the applicants' combined market share would give them "substantially increased leverage in dealing with broadband content providers, which it could use to extract more favorable terms for such services."²⁸²

Similarly, this Transaction would give the combined entity the increased ability to leverage its unparalleled size and subscriber base to extract higher fees from OVDs for access to their customers,²⁸³ diminishing competition in the broader video distribution marketplace. In Netflix's experience, {{

}}²⁸⁴ Today, {{

}} Thus, the combined entity would have the ability to demand significantly higher fees for access to TWC's network than TWC is able to demand standing alone. Further, post-merger, the combined entity

²⁸² *Id.* at 12 ¶ 33.

²⁸³ Evans Decl. ¶ 154.

²⁸⁴ *Id.*

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eventually would have the ability to extract payment for traffic that currently travels over TWC's settlement-free routes, thereby increasing the amount that edge providers must pay to access its customers on the combined entity's network.

OVDs would have to pay the combined entity more on a dollar per megabit per second basis for access to Comcast subscribers than they would if Comcast were acting alone. {{

}} Whether through direct interconnection, or a CDN or transit provider that incurs and then passes on terminating access fees, the cost that an OVD will pay to reach a subscriber of the combined entity will exceed that paid to reach a current Comcast or TWC subscriber. That terminating access fee will have no relationship to the cost incurred in delivering the OVD's traffic to the subscriber. Short of breaking an OVD's business, there is no apparent upper limit on the combined entity's ability to demand payment from an OVD for access to its customers.

Applicants attempt to explain away this merger-specific harm by relying on a bargaining model that argues: if the per-user profit for an OVD increases with the number of subscribers, a merger of ISPs would actually improve the bargaining position of an OVD with respect to access to subscribers of the combined entity, not worsen it.²⁸⁵ As Dr. Evans explains, that bargaining model is overly simplistic and does not apply to this Transaction for several reasons.

First, the conclusion that smaller ISPs can charge higher prices is counterintuitive and inconsistent with clear evidence that larger companies are able to exercise negotiating leverage

²⁸⁵ Evans Decl. ¶ 119.

²⁸⁶ Israel Decl. ¶¶ 154-156.

and demand better deals for themselves. Indeed, the model is inconsistent with how interconnection negotiations work in the actual marketplace. In Netflix's experience, small, and mid-size terminating access networks receive no payments, while the four largest terminating access networks receive significant payments. {{

}}.²⁸⁷ This outcome is wholly at odds with Applicants' assertions but entirely consistent with the actual experience of edge providers. Simply put, "[f]acts trump theory."²⁸⁸

Second, the bargaining model is flawed because it leads to an implausible theoretical result. That model assumes that the bargaining position of all sellers is the same with respect to all buyers. It assumes that sellers and buyers will split profits 50/50, regardless of the size or strategic position of the seller or buyer. Thus, the model assumes that Comcast with 20.7 million subscribers would receive the same 50/50 split as Cox with 4.6 million subscribers.²⁸⁹ At present, however, Cox interconnects with Netflix's Open Connect appliances at no charge while Comcast and Time Warner both charge for access, {{

The Commission should disregard the bargaining model proposed by Applicants, which is inconsistent with marketplace reality and potentially with Comcast's own assessments of the effect of the Transaction on the combined entity's bargaining power.²⁹⁰ Marketplace reality

²⁸⁷ Evans Decl. ¶ 146.

²⁸⁸ *Id.* at ¶ 159.

²⁸⁹ *Id.* at ¶ 160.

²⁹⁰ See David Cohen, Executive Vice President, Comcast Corp., Questions for the Record, Examining the Comcast-Time Warner Cable Merger and Impact on Consumers, Senator Mike Lee at 20 (Apr. 16, 2014), available at <http://www.judiciary.senate.gov/imo/media/doc/April%209,%202014%20-%20Cohen%20Responses.pdf> ("While any additional leverage

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shows that costs of access fees go up with the size of the terminating access network's subscriber base. Given that the combined entity would enjoy a terminating access monopoly over [[

]] of the national market for high-speed distribution of edge provider content, it is unclear what market forces would discipline its ability to foreclose OVDs and raise their costs.

D. Comcast's Ability to Leverage Data Caps and Power over Consumer Devices Will Extend to TWC

Just as the combined entity would enjoy a significantly greater ability to harm OVDs by leveraging its size and control of interconnection, the combined entity also would have an increased ability to foreclose OVDs through data caps and restrictions on set top boxes. When implemented by the largest terminating access network, those restrictions also would likely result in harm to OVDs.

While Comcast has been circumspect about its implementation of data caps (or usage-based pricing), it intends to require them in the near future.²⁹¹ TWC's prior experience with usage-based billing models suggests that it would have significant difficulty imposing restrictive data caps across its network, absent this Transaction. In 2008, TWC launched data caps on a trial basis in Beaumont Texas, with a 5-gigabyte monthly cap for subscribers with 768 Kbps connections and a 40 gigabyte cap for subscribers with 15 Mbps connections.²⁹² The data caps proved unpopular and TWC announced one year later that it would not expand the Beaumont

from this transaction could potentially help moderate future programming cost increases, it would more likely allow us to seek greater value for our customers.”).

²⁹¹ See Edited Transcript: CMCSA -Comcast Corporation at MoffettNathanson Communications Summit, Thompson Reuters StreetEvents at 13 (May 14, 2014), *available at* <http://files.shareholder.com/downloads/CMCSA/3168999141x0x754850/059910f6-e9e0-4ec8-b2c2-05cabdfcc644/Comcast%20at%20MoffettNathanson%20Transcript.pdf>.

²⁹² Ryan Paul, *40GB For \$55 Per Month: Time Warner Bandwidth Caps Arrive*, ArsTechnica (Jun 3, 2008), *available at* <http://arstechnica.com/uncategorized/2008/06/40gb-for-55-per-month-time-warner-bandwidth-caps-arrive/>.

trial to other markets.²⁹³ More recently, TWC has sought to encourage consumers to adopt a 30 gigabyte data cap voluntarily in exchange for a five-dollar discount. Of TWC's 11 million subscribers, only a number "in the thousands" opted for data caps.²⁹⁴

As a result of the Transaction, however, TWC's customers likely would be subject to Comcast's data caps in the near future. And with [[]] of all high-speed broadband subscriptions likely then subject to data caps, usage-based pricing may well become the new normal for the entire industry—ushering in a new era of data rationing in response. Such a result would, of course, also undermine the virtuous circle of innovation and broadband deployment that the Commission has been mandated to protect under Section 706 of the Telecommunications Act.²⁹⁵

Similarly, the Transaction would give the combined entity an increased ability to harm OVDs through set-top box restrictions. In *AT&T-MediaOne*, the DOJ noted that broadband service providers have the power to determine what information is displayed to a broadband customer as the "first screen" that the user sees. The DOJ found that favorable or unfavorable placement by the broadband service provider could have a powerful effect on the OVD's "likely audience, . . . revenues, and profitability."²⁹⁶

This Transaction would export the X1 platform to TWC's customers, and with it, Comcast's ability to control the "first screen" on the X1 platform as well as on the use of third-

²⁹³ Ryan Singel, *Time Warner Cable Cancels Download Cap Plans*, *Wired* (Apr. 16, 2009), available at <http://www.wired.com/2009/04/time-warner-c-1/>.

²⁹⁴ Mari Silbey, *TWC Subs Say No to Data Caps*, *Light Reading* (Mar. 12, 2014), available at <http://www.lightreading.com/services-apps/broadband-services/twc-subs-say-no-to-data-caps/d/d-id/708194>.

²⁹⁵ 47 U.S.C. § 1302.

²⁹⁶ *AT&T-MediaOne Complaint* at 10 ¶ 25.

party services and devices. In contrast, TWC has been demonstrably open to collaboration with third-party device manufacturers, allowing their customers to use their Roku or Fan TV device to watch content that is available to them through their TWC subscription.²⁹⁷ Those relationships would likely end once Comcast has control of TWC's systems. Instead of TWC's open and collaborative spirit, the combined entity likely would force subscribers into a single choice in devices—the X1—and with it a curated list of applications that limits consumer choice in video content.

VII. FORECLOSURE OF EDGE PROVIDERS WOULD LEAD TO OTHER SIGNIFICANT PUBLIC INTEREST HARMS

As part of its review, the Commission looks beyond competition-based harms, and evaluates whether a transaction would “accelerat[e] private-sector deployment of advanced services, [and] ensur[e] a diversity of information sources and services to the public.”²⁹⁸ Edge providers fulfill these public interest benefits in many ways. For example, OVDs increase the diversity of programming, promote and disseminate independent voices, increase consumer choice in how to share and access news, information and entertainment, and fuel the virtuous circle of innovation, broadband deployment, adoption, and investment. By degrading the service available to OVDs and raising their costs, the Transaction would significantly erode these public benefits.

²⁹⁷ See John Falcone, *TWC TV App Turns Roku into a Cable Box for Time Warner Customers (Hands-On)*, CNET (Mar. 5, 2013), <http://www.cnet.com/news/twc-tv-app-turns-roku-into-a-cable-box-for-time-warner-customers-hands-on/>; Ryan Lawler, *Fan TV's Streaming Set-Top Box Will Soon Be Available to Time Warner Cable Subscribers*, TechCrunch (Apr. 22, 2014), <http://techcrunch.com/2014/04/22/fan-tv-twc/>.

²⁹⁸ *Comcast-NBCU Order*, 26 FCC Rcd. at 4248 ¶ 23.

A. The Transaction Would Decrease Program Diversity

The Supreme Court has repeatedly underscored the Commission's duty and authority under the Communications Act to promote diversity and competition among media voices: "the widest possible dissemination of information from diverse and antagonistic sources is essential to the welfare of the public."²⁹⁹ The Commission has recognized the clear threat to the public interest posed by marketplace behavior that limits the diversity of programming available to consumers.³⁰⁰

Consumers today regard the Internet as one of the primary sources for news, information, and entertainment.³⁰¹ Edge providers fill gaps in programming left by incumbent providers by giving consumers access to educational programming, content in foreign languages, and other niche content that broadcasters and MVPDs typically do not carry. For example, Netflix offers an extensive selection of documentaries not widely available from more traditional TV

²⁹⁹ *Turner Broadcasting System, Inc. v. FCC*, 512 U.S. 622, 663 (1994) (quoting *Associated Press v. United States*, 326 U.S. 1, 20 (1945)).

³⁰⁰ See, e.g., *Comcast-NBCU Order*, 26 FCC Rcd. at 4282 ¶ 110 ("We agree that vertical integration of Comcast's distribution network with NBCU's programming assets will increase the ability and incentive for Comcast to discriminate against or foreclose unaffiliated programming.").

³⁰¹ In the U.S., 86 percent of consumers watch online video content. Accenture, *Video-Over-Internet Consumer Survey 2013, Multi-tasking and Taking Control: Winning the Trust of the Sophisticated Consumer 2* (2013), available at <http://www.accenture.com/SiteCollectionDocuments/PDF/Accenture-Video-Over-Internet-Consumer-Survey-2013.pdf>. Moreover, video represented more than half of global Internet traffic by 2011. *The Future of Video: Hearing Before the Subcomm. on Commc'ns and Technology of the H. Comm. on Energy & Commerce*, 112th Cong. (2012) (written statement of Chairman Greg Walden, House Subcommittee on Communications and Technology) ("*Future of Video Hearing*"), available at <http://energycommerce.house.gov/sites/republicans.energycommerce.house.gov/files/Hearings/CT/20120627/HHRG-112-IF16-MState-W000791-20120627.pdf>. Television is still king, but 69 percent of consumers today turn to their laptops and computers to access news and media. American Press Institute, *How Americans Get Their News* (Mar. 17, 2014), <http://www.americanpressinstitute.org/publications/reports/survey-research/how-americans-get-news/>.

sources.³⁰² Netflix original content frequently tackles challenging subject matters from a unique approach and character perspectives.³⁰³

OVDs, and the Internet more generally, are “helping re-conceptualize how content is made and consumed.”³⁰⁴ OVDs like YouTube ushered in the user-generated content revolution and also provide a medium through which small film studios, musicians, and artists can reach consumers when established channels of distribution remain closed to them. Independent organizations and studios like the Sundance Institute increasingly turn to subscription-based OVDs to reach audiences capable of sustaining independent filmmakers.³⁰⁵ Educational institutions also have embraced OVDs to either supplement in-classroom teaching or to provide an alternative for consumers seeking access to materials completely online. YouTube EDU and SnagFilms are among the top platforms for educational programming.³⁰⁶

The Transaction jeopardizes this content diversity by raising hurdles, if not barriers, between OVDs and the consumers requesting their content. In this respect, the same concerns

³⁰² Emily Steel, *Netflix Bolsters Offerings in Documentary Genre*, NYTimes, Jul. 28, 2014, available at http://www.nytimes.com/2014/07/28/business/media/netflix-bolsters-offerings-in-documentary-genre.html?_r=0.

³⁰³ See, e.g., Salamishah Tillet, *The New Season of ‘Orange Is the New Black’ Has a Diverse Cast and a Cynical Heart*, The Nation (June 16, 2014), available at <http://www.thenation.com/article/180255/new-season-orange-new-black-has-diverse-cast-and-cynical-heart#>.

³⁰⁴ *Future of Video Hearing* at 3 (written statement of David Hyman, General Counsel, Netflix, Inc.).

³⁰⁵ Srimathi Sridhar, *Sundance Institute Adds 11 Films to Hulu, Netflix and Snagfilms Through its Artist Services Program*, Indiewire (Aug. 23, 2012), <http://www.indiewire.com/article/sundance-institute-adds-11-more-films-to-artist-services-program-through-hulu-netflix-and-snagfilms>.

³⁰⁶ See, e.g., Sahiba Pahwa, *22 Best Online Resources for Free Educational Videos*, EdTechReview (Mar. 6, 2013), <http://edtechreview.in/e-learning/170-free-online-educational-videos-resources>; RefSeek, Educational Video Sites, http://www.refseek.com/directory/educational_videos.html (last visited Aug. 23, 2014).

about “customer foreclosure” present in *Comcast-NBCU* are present here.³⁰⁷ As a result of enhanced foreclosure strategies and raised costs post-Transaction, OVDs would have to reduce their investments in new, original, and diverse programming while some OVDs simply may fade.

B. The Transaction Would Diminish Consumer Choice and Value

OVDs have untethered consumers from their linear programming guides and also from MVPDs’ programming bundles. The Commission recognized the progress of the online video industry as one of the “most significant trends” affecting competition in the video distribution market.³⁰⁸ As Netflix General Counsel David Hyman explained, “[t]he Internet delivery of video provides consumers with unprecedented freedom and control over what video programming they can watch as well as when and where they can watch it. This is the future of video.”³⁰⁹

OVDs allow consumers to access premium content even when they are unable to afford premium cable packages. Comcast’s Digital Premier cable-only package costs between \$116.85 and \$131.40 per month depending on the consumer’s location.³¹⁰ {{

}} By contrast, OVDs offer monthly subscriptions as low as \$7.99

³⁰⁷ See *Comcast-NBCU Order*, 28 FCC Rcd. 4253 ¶ 34 and n.77 (noting that MVPDs “can harm competition in video programming through ‘customer foreclosure’ by limiting its programming rivals’ access to its downstream customers”).

Fifteenth Video Competition Report, 28 FCC Rcd. at 10498 ¶ 1.

³⁰⁹ *Future of Video Hearing* at 2 (written statement of David Hyman, General Counsel, Netflix, Inc.).

³¹⁰ This pricing data is based on unbundled television packages offered in Washington, DC as posted on Comcast’s website at <http://www.comcast.com/shop/deals-dealfinder?ex=False> (last visited August 10, 2014).

³¹¹ {{ }}

while many ad-supported OVDs offer video content to consumers free of charge. Particularly for low-income consumers, OVDs unlock a universe of otherwise unavailable content.

OVDs also allow consumers the freedom to view that content on the device of their choice regardless of whose footprint they are standing in at the time they choose to do so. Although MVPDs' TV Everywhere offerings attempt to mimic this freedom, required authentication and geographic restrictions ensure that TV Everywhere merely expands the bundle. Partial or full foreclosure of OVDs thus diminishes the value consumers derive from content made available via their broadband connections and also their freedom in how they reach that content. As the Commission recognized in *Comcast-NBCU*, foreclosure of alternative distributors may lead to higher prices and reduced choices for consumers.³¹²

C. The Transaction Would Inhibit Broadband Investment and Deployment

The Commission has identified streaming video as a primary driver of the virtuous circle. Even in 2010, when online video distribution was a relatively new phenomenon, the Commission recognized its potential to incentivize innovation and increase competition in the video distribution marketplace: "Streaming video [services] have led to major network improvements such as fiber to the premises, VDSL, and DOCSIS 3.0. These network improvements generate new opportunities for edge providers, spurring them to innovate further."³¹³ The *Verizon* court specifically cited these findings, and agreed with the Commission's conclusions, stating that the "rise of streaming online video is perhaps the best and clearest example the Commission used to illustrate that the Internet constitutes one such technology" that "create[s] a need for

³¹² See, e.g., *Comcast-NBCU Order*, 26 FCC Rcd. at 4252-53 ¶ 34 ("This power [to impair competition from distribution competitors] could result in higher prices and more limited consumer choice.").

³¹³ *Preserving the Open Internet Order*, 25 FCC Rcd. at 17911 ¶ 14 (citation omitted).

infrastructure investment . . . that complement[s] and further drive[s] the development of the initial innovation and ultimately the growth of the economy as a whole.”³¹⁴ The Transaction threatens the role that OVDs and other edge providers play in the perpetuation of the virtuous circle, which ultimately would harm the entire Internet ecosystem.

VIII. APPLICANTS’ CLAIMED PUBLIC INTEREST BENEFITS ARE TENUOUS, NON-MERGER SPECIFIC, AND UNDERMINED BY COMCAST’S INCENTIVE AND ABILITY TO DISCRIMINATE AGAINST OVDS

Many of the public interest benefits claimed by Applicants are derived—one way or another—from the allegedly competitive “cage match”³¹⁵ between Comcast and OVDs. According to Applicants, the growing competitive challenge from innovative edge providers requires Comcast, the single largest controller of broadband access and cable facilities in the United States, to gain even greater scale so that it can innovate. At the same time, those OVDs provide a powerful incentive for Comcast to accelerate investments into its network sufficiently to “meet tomorrow’s consumer and business demands.”³¹⁶ This combination, according to Applicants, means faster and better services from Comcast,³¹⁷ and more innovation from edge providers in response.³¹⁸

Unfortunately for the public, the competitive link between Comcast’s services and OVDs can be broken. Comcast already has the incentive and power to harm OVDs, and has already acted upon it. The proposed Transaction would increase Comcast’s incentive to discriminate and

³¹⁴ *Verizon*, 740 F.3d at 644 (citing *Preserving the Open Internet Order*, 25 FCC Rcd. at 17909-11 ¶¶ 13-14; Timothy F. Bresnahan & M. Trajtenberg, *General purpose technologies: ‘Engines of Growth’?*, 65 J. ECONOMETRICS 83, 84 (1995)).

³¹⁵ *Applications, Public Interest Statement* at 27 (citation omitted).

³¹⁶ *Id.* at 31.

³¹⁷ *Id.* at 30-31.

³¹⁸ *Id.* at 56.

heighten its power to do so. This significant risk of additional anti-competitive behavior is not merely public-interest harm; it also draws into question many of the speculative benefits cited by Applicants.

A. Many of the Purported Public Interest Benefits Rely on Competition from the Very Entities That the Merged Entity Would Have the Incentive to Harm

Applicants cite the significant competition they face, both from online-service providers—such as Google, Amazon, Apple, Microsoft, and Netflix—and wired and mobile broadband providers—principally AT&T and Verizon. This fierce competitive “cage match” necessitates the Transaction, according to Applicants, so that the combined entity can obtain the increased economies of scale necessary to match or better the innovations of these competing services.

At the same time, Applicants cite the combined entity’s incentive to quicken the deployment of advanced broadband service in order to “meet tomorrow’s consumer and business demands,” and the benefit this additionally deployed capacity would have on edge providers.³¹⁹ While Applicants stress to the Commission that they “need not rely” on the virtuous circle of innovation,³²⁰ the combined entity’s incentive to build out broadband capacity is unquestionably tied up in its subscribers’ desire to access much of the same content provided by companies that Applicants view as competitors. The purported benefit to edge providers is unquestionably tied to the ability of the combined entity’s customers to use that capacity to access edge-provider content at that full speed.

³¹⁹ *Id.* at 36.

³²⁰ *Id.* at 30 (“The Commission need not rely here on what some have called a ‘triple cushion shot’ chain of reasoning to link its actions to the Congressional objective.”).

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The expansion of competition among edge providers and Applicants' services is both a necessary and essential component of the alleged public benefits of this Transaction. Without that competition, the combined entity's incentive merely would be to deploy sufficient capacity to support its existing content offerings, and restrict its customers' access to content provided by its competitors—much as it has done with its cable television franchise. With little or no competition from facilities-based providers, such conduct would be (as it has been so far) low risk.

The chief problem with Applicants' theory of benefits is that it rests on the premise that the combined entity would not, and could not, foreclose competition from edge providers. That premise is untenable. While Comcast has adopted network neutrality rules for broadband access services, it has engineered around the regulation by manufacturing bandwidth crises at interconnection points, restricting the ability of Comcast's customers to enjoy content from unaffiliated edge providers, such as Netflix. Comcast has shown that it would degrade the service it provides to its own customers to improve its negotiating position with edge providers. That incentive and ability to discriminate would grow significantly post-Transaction.

B. Many of Applicants' Proposed Benefits Are Weak, Speculative, or Non-Existent

Without certainty that the combined entity could not harm its competitors seeking access to its network, it is unclear whether any of the purported benefits would manifest. Even leaving aside Comcast's ability to harm its competitors, many of the Applicants' public-interest benefits are weak, speculative, or simply non-existent.

1. The NBCU Conditions Are Not Public Interest Benefits from This Transaction

The conditions adopted in the *Comcast-NBCU Order* were not public interest benefits then and cannot be cited as such now. The Commission imposes conditions on a transaction to ameliorate a specific public harm so significant that the Commission would otherwise have designated the transaction for a hearing.³²¹ A condition is not a positive in the public-interest ledger—it negates a particular public-interest harm.

The *Comcast-NBCU* conditions are no exception. Those conditions were necessary to mitigate the significant public-interest harms that flowed from Comcast’s vertical integration with NBCU. Each specific harm necessitated a specific condition. And those harms are not only still present; they would be magnified by a merger with TWC. For that reason, application of those conditions to this Transaction is inevitable, even if they are insufficient to ameliorate the new public interest harms created by enlarging Comcast.³²² That does not make those conditions a public interest benefit. Moreover, those conditions have not proven sufficient even to protect the harms of the last transaction and have created new ones. For example, the network neutrality condition did not prevent Comcast from discriminating recently against Netflix’s traffic, resulting in significant harm to the service of Comcast’s own customers.

2. Increased Scale Is Not By Itself a Public-Interest Benefit

Comcast makes a great deal out of the potential for increased economies of scale that this Transaction would offer it, but it offers no specific evidence of any product, service, or

³²¹ See *Comcast-NBCU Order*, 26 FCC Rcd. at 4266 ¶ 72.

³²² Given Comcast’s ability to use its interconnection practices to disrupt its customer’s reception of Netflix content, even in the face of the NBCU conditions, those conditions would obviously not address the substantial harm to OVDs, consumers, and innovation in the video marketplace that this Transaction will cause.

innovation that combining with TWC would allow it to undertake, that it would not have been able to undertake without TWC. Instead, Comcast offers a far more modest benefit: incremental (though largely unspecified) improvements in how it spreads costs and increased leverage when negotiating terms with equipment and content providers.

Whatever the benefit of this increased negotiating leverage for Comcast's bottom line, it is not clear that this incremental shift in leverage would result in any meaningful benefit to consumers or the public in general. As David Cohen admitted early on, Comcast will make no assurance that "customer bills are going to go down or even increase less rapidly,"³²³ despite widespread acknowledgment that cable services are expensive and have grown more so each year. And Comcast's increase in size also may cause as many problems as it solves. Prices for Comcast's services have increased significantly over this time.³²⁴ There is little to suggest that a massive increase in size would reverse this trajectory. Consumers are as likely as not to be left paying more money, for the same service, and with few meaningful alternatives.

³²³ See Jon Brodtkin, *Comcast: No Promise That Prices "Will Go Down Or Even Increase Less Rapidly"*, Arstechnica (Feb. 13, 2014), <http://arstechnica.com/tech-policy/2014/02/comcast-no-promise-that-prices-will-go-down-or-even-increase-less-rapidly/>; Cecilia Kang, *Lawmakers Question Comcast and Time Warner Cable on Proposed Merger*, The Washington Post, Apr. 9, 2014, available at http://www.washingtonpost.com/business/technology/lawmakers-question-comcast-and-time-warner-cable-on-proposed-merger/2014/04/09/51172048-c01b-11e3-b195-dd0c1174052c_story.html ("Cohen said he couldn't promise to reduce prices after the merger.").

³²⁴ See Free Press, *Four Infographics Reveal Why the Comcast Merger is Bad for You* (Mar. 26, 2014), <http://www.freepress.net/blog/2014/03/26/four-infographics-reveal-why-comcast-merger-bad-you> ("[w]e reviewed Comcast's prices for its basic and premium cable packages from 2009-2013 and found that Comcast has hiked its rates far more than competitors"). Cf. Todd Spangler, *Variety, Free Press, A Strong Critic of Comcast-TW Cable Merger, Massages Rate-Hike Data in Lobbying against Deal*, Variety (April 15, 2014), <http://variety.com/2014/biz/news/did-comcast-raise-cable-tv-rates-68-in-the-past-four-years-not-exactly-1201157627/> ("[I]t's not clear how reflective the rate changes in those markets are for Comcast, Time Warner Cable or AT&T across the board.").

3. Comcast's Acceleration of TWC's Broadband Deployment and Technological Innovations Provide Only a Minor Public Interest Benefit

TWC has admittedly been slower to upgrade its facilities than has Comcast. But TWC was and is upgrading those facilities,³²⁵ which, absent the Transaction, is scheduled to be completed in many large metropolitan areas by the end of 2015³²⁶ and across 75 percent of its footprint in 2016.³²⁷ Consequently, Comcast cannot claim, as a benefit of this Transaction, the rollout of network upgrades and new services that TWC was either already planning or likely to also have developed absent the Transaction. At best, the merger would slightly accelerate the timeline for deployment of such upgrades and services, although the delays caused by the difficulty of integrating a company the size of TWC into Comcast suggests otherwise.

IX. CONCLUSION

The proposed merger of Comcast and TWC presents serious public interest harms stemming from the combined entity's increased ability and incentive to harm providers of Internet content. The public interest harm cannot be balanced by any cognizable public interest benefit in this Transaction. Nor are the conditions offered by Applicants capable of protecting

³²⁵ See *Applications, Public Interest Statement* at 32 ("TWC too has invested significantly in advanced broadband technologies like DOCSIS 3.0, and has upgraded its network to bring faster speeds.").

³²⁶ Eric Frazier, *Time Warner Cable Announces Faster Internet, Enhanced TV Services in Charlotte*, Charlotte Observer (July 31, 2014), <http://www.charlotteobserver.com/2014/07/31/5078214/time-warner-cable-announces-faster.html#.U-eK6vldVVI> ("Time Warner said it will upgrade next year to speeds up to six times faster than its current broadband service in Charlotte, Raleigh, Dallas, Hawaii, Kansas City, San Antonio and San Diego.").

³²⁷ See, e.g., Mike Farrell, *TWC Unveils Three-Year Ops Plan*, MultiChannel News (Jan. 30, 2014), <http://multichannel.com/news/cable-operators/twc-unveils-three-year-ops-plan/325712#sthash.ZfMWrxp6.dpuf> ("Marcus said TWC is aggressively moving to improve product quality and service—its TWCMaxx initiative is underway in New York City and Los Angeles and will spread across 75% of the footprint in 2015 and 2016; and is beefing up broadband speeds across the board.").

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against those harms. For the forgoing reasons described in this Petition, Netflix respectfully requests that the Commission deny this Transaction.

Respectfully submitted,

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August 27, 2014

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DECLARATION

I declare under penalty of perjury that the facts contained within the foregoing Petition to Deny and its appended material, except for those facts for which official notice may be taken and those that other parties have submitted to the Federal Communications Commission confidentially under the protection of the *Protective Orders* in MB Docket No. 14-57, are true and correct to the best of my information, knowledge and belief.

Executed on August 27, 2014



Corie Wright
Director of Global Public Policy
Netflix, Inc.

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DECLARATION OF KEN FLORANCE

1. My name is Ken Florance. I am the Vice President of Content Delivery at Netflix. I have held the position of Vice President of Content Delivery since 2012. In this role, I am responsible for the seamless delivery of more than one billion hours each month of streaming video content to more than 50 million Netflix members in over 40 countries. In connection with these responsibilities, I oversee Open Connect, Netflix's single-purpose content delivery network ("CDN") designed for Netflix streaming video. I have led the network architecture efforts for Netflix's streaming video service since its launch in 2007.

2. The purpose of this declaration is (1) to describe the manner in which Netflix has delivered its content to Internet service providers ("ISPs") from 2007 to the Present; and (2) to show how systematic conduct by Comcast Corp. ("Comcast") in the market has led to its ability to impose a terminating access fee on Netflix and others. In my opinion, based on this experience, if Comcast's proposed acquisition of Time Warner Cable, Inc. ("TWC") were allowed to proceed, the market power that Comcast is able to exert against content providers on the Internet, including Netflix, would be substantially increased.

Terms and Definitions

3. Throughout this declaration I will use the term "terminating access network" to mean last mile residential ISPs such as Comcast and TWC. I use this term because a terminating access network is the final destination for delivery of content to consumers; the majority of commercial content does not originate from that kind of network or use that kind of network to reach other points on the Internet.

4. There are two sets of costs involved in delivering traffic to a terminating access network: transit costs and storage costs.

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5. Transit networks, or “transit providers,” provide the service to their customers of carrying bits to other networks on the Internet. Cogent, XO, Level 3, Tata, NTT, and TeliaSonera are examples of providers that are able to reach all other networks on the Internet without paying a third party for transit; they are directly interconnected with all networks that make up the Internet.

6. Historically, terminating access networks, which charge their customers (consumers) for broadband service, have either paid transit providers to deliver traffic to their networks, or, when their networks have grown to a sufficiently large size, they have entered into agreements where the transit providers deliver traffic to their network without payment from the terminating access network (known as a “settlement-free” arrangement). Regardless of whether the transit provider is paid by the terminating access network or has a settlement-free arrangement with the network, content (or “edge”) providers such as Netflix pay the transit provider to deliver the content provider’s traffic to the terminating access network. Comcast’s market power has increased sufficiently to the point where it has settlement-free arrangements with at least three of the four major transit providers with whom it interconnects (Cogent, NTT, and Level 3);¹ Comcast still pays Tata for some traffic, particularly for traffic originating outside North America.

¹ My understanding of Level 3’s transit arrangement with Comcast is that most of the traffic delivered to Comcast’s network is settlement-free but that the arrangement may include some kind of value exchange for some of the network capacity.

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7. CDNs provide the service of storing and serving content. CDNs also may “localize” content by storing content in or physically near to a terminating access network. Limelight, Akamai, and Level 3 are examples of commercial third-party CDNs.

8. When a CDN is embedded within a terminating access network, the physical piece of equipment embedded within the terminating access network is sometimes called a “cache server.” A CDN provides value to a terminating access networks because the CDN places content as close as possible to that terminating access network’s customers (consumers), decreasing the distance that packets need to travel. Placing content closer to consumers results in a higher-quality consumer experience than if the consumer had to call up content that is stored further away from the terminating access network.

9. By “higher quality” I mean that the consumer experiences a higher rate of completed packet delivery in an efficient manner. When content is transmitted to a consumer, if a packet is dropped, the consumer experiences that as, e.g., for a video stream, reduced picture quality, buffering, or pixilation.

10. In addition to providing terminating access networks with improved content quality, CDNs also can reduce the transit costs paid by terminating access networks (where such networks pay for transit), because more content is stored within or near the terminating access network and so does not need to be retrieved remotely. Because the information can be stored at multiple locations within the terminating access network, CDNs also can reduce the terminating access network’s overall on-network traffic. And because information is stored within or close to the terminating access network and only needs to be refreshed periodically (which can be done at off-peak hours), CDNs can lower the transit costs paid by content providers as well. That is

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why I have described the use of CDNs as a “win-win” for terminating access networks and content providers alike, a view that I believe is widely shared within the industry and accounts both for the growth of third-party CDNs like Limelight, Akamai, and Level 3, and the prevalence of self-supplied CDNs such as those deployed at different times by Netflix.

11. Transit providers and CDNs exchange traffic with terminating access networks at public Internet exchange points (“IXPs”) or directly in private exchanges. An IXP is a location where several networks—terminating, transit, and CDN—may maintain a presence so that they can exchange traffic with each other. There are nine major IXPs in the United States, which are located in: Ashburn, VA; Atlanta, GA; Chicago, IL; Dallas, TX; Los Angeles, CA; Miami, FL; New York, NY; San Jose, CA; and Seattle, WA. The physical point of connection between two networks exchanging traffic with one another is referred to as “interconnection.”

Interconnection is accomplished through router ports. Router ports typically have a capacity of 10 gigabits, though there are some networks that offer 100 gigabit ports.

12. In addition to transit providers and CDNs, large content providers such as Netflix often also will agree to interconnect with any network that can meet the content provider in an IXP. To interconnect to another network, the content provider and the other network typically only needs to run a cable from the content provider’s router to the other network’s router a few feet away within the IXP.

13. The act of one network interconnecting directly with another is known as “peering.” Peering can take place not only at an IXP, but also at other locations designated by the interconnecting parties. As is the case at an IXP, interconnecting at other locations typically involves running a cable between routers located within a few feet of one another. Netflix

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currently offers to interconnect with terminating access networks in the United States directly through private exchanges, as do many other large content providers, or directly at locations within or close to the terminating access network's footprint.

Netflix Delivers Traffic to Terminating Access Networks in Three Different Manners

14. Today, Netflix delivers its traffic to terminating access networks in three ways. Under all of these arrangements, Netflix pays transit and storage costs to deliver the content as close to the consumer as the terminating access network will allow because doing so improves the quality of the service Netflix delivers to its customers (who are, of course, also customers of the terminating access network).

15. One way Netflix delivers traffic to terminating access networks is through embedded CDN cache servers within the terminating access network. For example, Netflix delivers traffic to Cablevision through such an arrangement.

16. Netflix's CDN is called Open Connect. Open Connect is a dedicated, single-purpose CDN used solely to deliver Netflix traffic. Netflix offers Open Connect appliances to qualifying terminating access networks free of charge, which means that Netflix pays for the hardware (the cache servers or "appliances"), delivery, and maintenance of the appliance (including replacements when needed). As stated on Netflix's website, a terminating access network is eligible to receive an Open Connect appliance if it meets certain technical requirements and serves a population of approximately 100,000 consumers or more.

17. When Netflix first delivers the Open Connect appliances to a terminating access network partner, the appliances come fully loaded with content that constitutes approximately {{ }} percent of viewing hours for Netflix's United States catalog. When Netflix adds a title

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to its content catalog, it only needs to send one copy of that title to each Open Connect appliance—the bit usage equivalent of streaming a movie once—a refresh that happens in the middle of the night when transit networks are not heavily used, typically between 2 a.m. and 2 p.m. local time.

18. Open Connect provides several benefits to terminating access networks and their customers. First, the terminating access network can install the Open Connect appliances as deep into its network as it would like, so that consumers experience streaming video at the highest quality level the terminating access network's infrastructure will allow. Second, using Open Connect appliances to deliver the vast majority of Netflix's content, the terminating access network very rarely needs to bring Netflix traffic into its network across transit links or peering infrastructure. This greatly reduces the amount of internal network capacity required between the terminating access network's local metro facility and the IXP locations it uses to reach its transit providers and peers, which may include multiple segments of the access network (such as regional aggregation facilities). Third, because Open Connect appliances are refreshed in the middle of the night, even these refreshes do not impose any additional transit cost or infrastructure capacity burden on the terminating access network. This is because networks are built and billed based on peak utilization, so off-peak content refresh has zero incremental costs (whether in billable transit or in infrastructure utilization).

19. This method of utilizing Open Connect reduces the cost to, and burden on, terminating access networks, and improves the quality of service to their customers.

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20. A second manner in which Netflix delivers traffic to terminating access networks is through direct interconnection at IXPs or private exchanges. For example, Netflix delivers traffic to Cox Communications in this manner.

21. This second method of interconnection also involves the Open Connect CDN, but instead of embedding an appliance within its network, a terminating access network connects to Open Connect at an IXP or some other location as agreed upon by the parties. Under this arrangement, Netflix pays a transit provider to deliver the bits necessary to refresh the Open Connect cache servers when there are updates to the content catalog. This method of interconnecting still offers many of the benefits to a terminating access network that it might enjoy if it embedded an Open Connect appliance directly into its network: content stored closer to the terminating access network results in an improved viewing experience for consumers; the terminating access network saves in transit fees; and Netflix traffic is kept off of busy transit networks during peak hours.

22. When Netflix delivers traffic to a terminating access network via Open Connect at an IXP, Netflix pays “rent” to the IXP for space and power. When a terminating access network embeds an Open Connect appliance in its network, that appliance sits in the space and shares in the power source already used by the terminating access network’s other hardware. The terminating access network enjoys cost savings in the form of substantially reduced traffic volume on its network (and hence substantially reduced need to build additional infrastructure over time) and increased quality of video streams to consumers.

23. The third manner in which Netflix delivers traffic to terminating access networks is through transit providers. For example, Netflix uses transit providers to deliver traffic to

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Charter, CenturyLink, and terminating access networks that do not have peering capability and are not large enough to qualify for a dedicated Open Connect appliance. Transit providers, such as Cogent or Level 3, accept traffic from Netflix at an IXP and then deliver that traffic over their own network infrastructure to other IXPs at which the transit provider interconnects with the terminating access network in question. Using transit allows Netflix to reach multiple terminating access networks through a single provider that also is providing that transit service to other edge providers. Because Netflix is present at all IXPs in the United States, the hand-off of traffic from Netflix, to the transit provider, to the terminating access network often takes place within the same IXP, where Netflix, the transit provider, and the terminating access networks' servers are present within a few feet of each other. Nonetheless, where the terminating access network prefers to accept delivery of traffic on to its network in this manner, Netflix does so. .

24. What all three methods of delivering Netflix content to terminating access networks have in common is that Netflix fully covers the cost of delivering to the terminating access network's doorstep bits requested by the terminating access network's customers, thereby imposing virtually no cost on the terminating access network. As I describe below, Netflix has always covered this cost of delivery

Comcast's Systematic Effort to Extract Terminating Access Fees

25. Netflix launched its video streaming service in 2007. In preparation for the initial launch, we designed and deployed our own CDN that we hosted in five locations across the country, and we paid transit providers to deliver this content to terminating access networks. At that time, as had always been the business norm among networks (and remains the norm in most countries outside the United States), most transit providers and CDNs delivered their traffic

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(including Netflix traffic) to most terminating access networks² either in exchange for a fee paid by the terminating access network, or on a settlement-free basis.

26. Comcast fundamentally changed the terms of its relationships with CDNs, transit providers, and content providers from 2008 to 2014. During this period, Comcast succeeded in departing from the previous business norm under which the terminating access network paid for the delivery of traffic to its network, or received such traffic without payment. Instead, Comcast sought to impose, and has succeeded in imposing, a new fee on transit providers, CDNs, and content providers. This fee is imposed in exchange for Comcast's agreement to *accept* the traffic delivered to its network.

27. The network traffic exchange community is very small. On the order of 100 individuals architect and manage the technical and business relationships related to the exchange of the vast majority of traffic on the Internet—and, because our task historically has been to send data from its point of origination to its destination in the most efficient manner possible, it has been part of my job responsibilities to understand the most efficient means of delivering traffic to different terminating access networks.

28. We in the Internet traffic community have always operated by the rule to first “do no harm” to the network. That meant, for instance, a regular practice of augmenting interconnection capacity so that if a CDN's ports into a terminating access network started to

² A few terminating access networks have the ability to reach all other networks on the Internet without paying for transit, as do some pure-play transit providers. Those few terminating access networks are paid for peering by other networks.

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regularly go above 70% capacity utilization, the terminating access network would make additional routes or capacity available.

29. Comcast began a practice in 2009 to 2010 in which it allowed its ports with certain settlement-free transit networks and CDNs to congest, which in turn caused some of those networks and CDNs to begin paying Comcast for interconnection. As detailed below, many of those networks were networks through which Netflix delivered its traffic to Comcast.

30. By 2008, consumer demand for edge provider content, including Netflix's service, had grown significantly. Netflix realized the critical importance of reliable access to the subscribers of terminating access networks who requested Netflix streaming videos. At the time, Netflix believed that third-party CDNs would be more effective than Netflix at managing relationships with terminating access networks to guarantee reliable access. Accordingly, Netflix began delivering its content through third-party CDNs. Those CDNs could host Netflix content in many locations to reduce the distances—and therefore the time—that content needed to travel to reach the requesting consumer. In 2008, Netflix entered into agreements for transit services with Level 3 and CDN services with Limelight. At that time, Level 3 peered settlement-free with Comcast.

31. During this period, terminating access networks—including Comcast—were growing both organically through increasing traffic volume requests from consumers and through consolidation as small terminating access networks were acquired by larger terminating access networks. As Comcast grew, it was able to convert all but one of the transit services, for which it had been paying, to settlement-free arrangements.

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32. In 2009, Netflix entered into an agreement with Akamai for its CDN services. Most agreements between networks are covered by confidentiality clauses, but my understanding, drawn from my observations in the market at the time, is as follows. Not long after Akamai took on Netflix traffic, Comcast used a number of different tactics against Akamai, including de-peering and congestion, in an attempt to force Akamai to pay Comcast a terminating access fee. In 2010, when Netflix's CDN agreement with Akamai was up for renewal, Akamai's price terms were not in keeping with other CDNs' pricing, such as Limelight and Level 3. It is my understanding that Akamai decided to pay Comcast's new terminating access fee.

33. Netflix's experience using Limelight's CDN service to deliver traffic requested by Comcast's customers followed the same pattern. Initially, whenever Limelight had started to come close to its capacity, it would request additional capacity via their upstream transit provider, Global Crossing (later acquired by Level 3), and Comcast would make additional capacity or settlement-free routes available.

34. Around August of 2010, however, Comcast demanded that Limelight pay a terminating access fee to interconnect directly with Comcast and no longer made additional capacity available to Global Crossing. When Limelight refused to pay, it experienced significant congestion and degradation in its delivery to Comcast. I was in close communication with Limelight during this period because the congestion was having a significant adverse effect on the quality of Netflix streaming video, which consumers were experiencing.

35. At that point, Akamai was already a paid peer of Comcast and so did not face any congestion into Comcast's network. Limelight could not refuse Comcast's demand for payment

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because it likely would have risked losing substantial business to Akamai. Limelight assured Netflix that it would solve the congestion problem with Comcast and it did. By October 2010, the Netflix traffic Limelight terminated on Comcast's network no longer faced congestion. It is my belief and understanding that Comcast ceased allowing Limelight's traffic to congest because Limelight agreed to pay Comcast the terminating access fee it demanded from Limelight.

36. In November 2010, in an effort to avoid congestion or arbitrary terminating access fees, Netflix added Level 3 to its roster of CDNs. Partnering with Level 3 made sense for Netflix because Level 3 had long-standing settlement-free peering arrangements with large terminating access networks like Comcast, whose customers were requesting an increasing amount of traffic from Netflix.

37. Approximately one week after Netflix's agreement with Level 3 went into effect, Comcast demanded a new terminating access fee from Level 3 to accept traffic on its network even though—as in every other similar case—that traffic was requested by Comcast's customers, who paid Comcast a premium for high speed broadband. According to Level 3, this was “the first time [that Comcast demanded] a recurring fee from Level 3 to transmit Internet online movies and other content to Comcast's customers who request such content.”³

38. As happened during the Akamai-Comcast and Limelight-Comcast congestion episodes, consumers on Comcast's network experienced poor Netflix streaming quality during the pendency of the congestion. After three days of heavy congestion at interconnection points

³ Letter from John M. Ryan, Assistant Chief Legal Officer, Level 3 Communications, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, GN Docket. No. 09-191, Nov. 30, 2010 at 2.

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between Comcast and Level 3's networks, Level 3 agreed to pay the new requested fee for terminating traffic on Comcast's network.⁴

39. Much as with Akamai and Limelight, in the short term Netflix was insulated from a sudden price increase, but I knew we had to find some other way to deliver traffic to terminating access networks that would not result in congestion or payment of arbitrary terminating access fees. Those fees, which would be passed on to Netflix, could be subject to unpredictable price increases by Comcast. Around this time, therefore, Netflix began developing its Open Connect CDN. In the interim, we continued to send our traffic through our existing CDNs through which we were price-protected due to our contracts, or through other transit providers.

40. After the Akamai, Limelight, and Level 3 CDN congestion episodes, Netflix began transitioning its traffic from CDNs (all of whom, we believed, were paying Comcast's new terminating access fee) to transit providers in our continued effort to avoid terminating access fees. Netflix continued to deliver its traffic through Level 3, but instead of using its CDN services, we used Level 3's transit services.

41. In February 2012, Netflix also entered into an agreement with Cogent for its transit services. At the time, as I believe remains the case today, Cogent and Comcast were settlement-free peers. As happened systematically before, and detailed below, not long after Cogent began delivering significant Netflix's traffic to Comcast subscribers in August 2012, Comcast began to allow Cogent's routes into Comcast to congest.

⁴ *Id.*

Netflix Launches Open Connect

42. In June 2012, Netflix formally launched Open Connect, which involved more than \$100 million dollars in research, development, and deployment costs. When we launched Open Connect, it started out delivering five percent of Netflix's streaming traffic. The percentage of Netflix traffic delivered to terminating access networks via Open Connect quickly increased as we continued to build out our Open Connect presence at IXPs and partnered with an increasing number of terminating access networks.

43. Today, Netflix delivers its traffic through Open Connect to approximately [[]] terminating access networks in the United States without payment of a terminating access fee. Regardless of the manner in which Open Connect is implemented, the terminating access network selects the location or locations to which Netflix will deliver the Open Connect appliances or interconnect with the terminating access network. Netflix then deploys the Open Connect appliances, at its expense, to any and all qualifying interconnection points the terminating access network chooses. As I stated above, terminating access networks are highly motivated to install an Open Connect appliance on their network or peer with Netflix via Open Connect because it maximizes the efficiency of traffic delivery and reduces costs to the benefit of consumers, the terminating access network, and Netflix.

44. From late 2012 until February 2014, Netflix relied on transit providers to deliver traffic to Comcast, TWC, AT&T, and Verizon, because those four networks—unlike almost every other terminating access network in the United States—refused to interconnect with Netflix either at locations within their terminating access networks or at IXPs without Netflix paying a terminating access fee. As detailed below, Comcast refused to accept the Netflix traffic

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that Comcast's own customers were requesting despite the fact that Netflix was willing and able to deliver that traffic, at no cost to Comcast, to any and all locations of Comcast's choosing, at locations close to and even within Comcast's network.

Comcast's Most Recent Exercise of Market Power: Winter 2013/2014 Congestion Episode

45. In mid-2013, Netflix experienced a gradual decline in bitrates for Comcast customers, which accelerated into the second half of 2013 as the connection speeds for Netflix's subscribers on Comcast's network started to fall below those for Netflix's subscribers using other terminating access networks. In August 2013, we began to notice that interconnection points between our third-party transit providers and Comcast were becoming congested. Congestion quickly reached the point where the Netflix streams consumers received on Comcast's network were of increasingly degraded quality as the result of dropped packets.

46. Comcast had stated many times before that it had significant excess capacity on its network, so we knew that lack of capacity was not the issue. And, if the issue were one of capacity constraints at interconnection points, Comcast could have easily, quickly, and inexpensively remedied that by adding additional router ports. For reference, adding port capacity costs less than \$10,000—a cost which is typically amortized over three to five years by the access network. Comcast, however, did not add capacity or make available additional uncongested settlement-free routes into its network and the congestion problems persisted. Instead, Comcast continued to allocate only limited capacity for routes into its network through settlement-free connections—which were increasingly congested.

47. By the end of 2013, we noticed a steep decline in the bitrates of Netflix traffic that our transit providers delivered to Comcast's network.

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48. At that time Netflix was purchasing transit from all six transit providers who operate in the United States and did not pay Comcast a terminating access fee: Cogent, Level 3,⁵ NTT, TeliaSonera, Tata, and XO. Three of those transit providers, Cogent, Level 3, and Tata, interconnected directly with Comcast. NTT, Telia, and XO connected to Comcast through settlement-free routes with Cogent and Tata.

49. {{

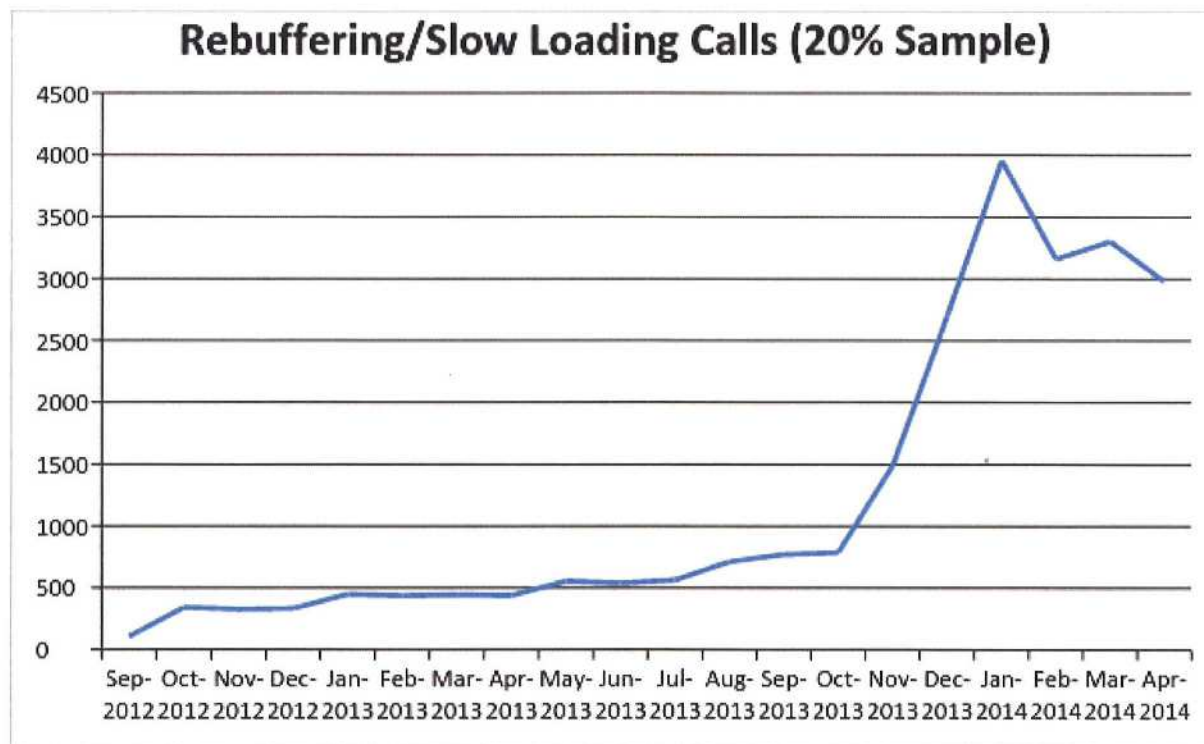
}} When we approached Comcast regarding the lack of uncongested settlement-free routes available into its network, Comcast suggested that Netflix either pay Comcast a terminating access fee to interconnect, or go back to using paid CDNs to deliver Netflix traffic to Comcast's network. Comcast also suggested that Netflix could try to use AT&T to deliver traffic to Comcast. This was not an option as AT&T was unwilling to sell Netflix transit services without also demanding a terminating access fee for Netflix's traffic to AT&T's terminating access network.

50. In December 2013 and January 2014, congestion at interconnection points to Comcast's network reached a critical threshold. Bitrates plunged to levels where the quality of

⁵ As stated above, *supra*, note 1, my understanding is that Level 3's business arrangement with Comcast is primarily a settlement-free peering arrangement that may include some kind of value exchange for additional network capacity.

Netflix streaming video approximated that of VHS cassette and streaming required constant rebuffering.

51. As congestion at interconnection points with Comcast's network increased, the call volume at Netflix's customer support centers increased dramatically, as show in the graph below.



52. For many subscribers, the bitrate was so poor that Netflix's streaming video service became unusable. A number of Comcast's customers complained to Comcast about the poor video streaming quality they were experiencing. My understanding is that Comcast suggested to some customers that perhaps their modem was faulty and recommended that they replace it with a new one. When Comcast's customers complied with those suggestions and they continued to experience poor quality or unwatchable Netflix video streams, my understanding is

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that Comcast told its customers to contact Netflix. Those customers complained to Netflix and some of them canceled their Netflix subscription on the spot, citing the unacceptable quality of Netflix's video streams and Netflix's inability to do anything to change the situation.

53. December and January are critical months for Netflix's net subscriber additions. It is also one of our busiest times because consumers spend more time at home over the holidays and therefore request more streaming video from Netflix and other online video distributors ("OVDs"). It became clear that Comcast would continue to allow congestion across its network to negatively affect its customers' online video streaming experience. Netflix began to view the degradation {{

}}.

54. Congestion degrades Netflix's streaming video traffic, leading to a rapid decline in video quality as the result of packet loss. {{

}} we had to do something to make the congestion stop.

55. Netflix was therefore left with three choices. It could pay Comcast's terminating access fee indirectly, through CDNs who had already been forced to capitulate to the imposition of such a fee; it could continue to use transit providers who were experiencing congestion that made Netflix's service virtually unviewable; or it could pay Comcast a terminating access fee directly.

Comcast Extracts a Terminating Access Fee from Netflix

56. After several cold starts to negotiating terms to a direct interconnect agreement between the parties, in January 2014, Netflix reluctantly—and with no other choice— recommenced interconnection negotiations with Comcast, with the understanding that Netflix would be forced to pay Comcast’s terminating access fee. Netflix saw that there was no end in sight to the degradation Comcast was willing to inflict on our traffic at the expense of Comcast’s own customers’ user experience, and we needed long-term protection to prevent any future degradation.

57. Netflix reached an agreement with Comcast in February 2014. Under the terms of the agreement, Comcast agreed to interconnect with Netflix via Open Connect and to provide sufficient capacity for Netflix to deliver streaming video requested by Comcast customers at bitrates that allowed for an acceptable viewing experience. Also included under the terms of the interconnection agreement is Netflix’s agreement to pay Comcast’s terminating access fee. Netflix does not pay Comcast for transit or CDN services. As Netflix always has, it will continue to internalize all of those transit and storage costs to deliver Netflix traffic to the edge of Comcast’s network, or if Comcast ever so chooses, to whichever location within Comcast’s network that Comcast likes.

58. Notwithstanding its earlier refusal to add capacity or make available more routes over settlement-free connections to alleviate massive congestion, Comcast made available sufficient capacity to allow Netflix to deliver multiple Terabits per second of traffic within a week of concluding its agreement with Netflix. The sudden availability of interconnection

capacity alleviated congestion and improved bitrates so that Comcast's customers were once again able to receive the HD-quality Netflix video that consumers have come to expect.

Foreclosure and Price Effects of Comcast's Proposed Acquisition of TWC

59. As I also mentioned above, the network traffic exchange community is small and all the players involved—by necessity—work closely together and keep careful watch of traffic flows. After Netflix concluded its interconnection agreement with Comcast, it became well known among network traffic exchange circles that Netflix had paid Comcast's terminating access fee. TWC, Verizon, and AT&T also had demanded payment. In keeping with its normal practice, Netflix offered to interconnect with each of those three terminating access networks, via Open Connect at Internet exchange points or through Open Connect appliances installed within those terminating access networks. Instead, those three terminating access networks refused to interconnect with Netflix unless—in addition to delivering its traffic to the terminating access networks' edge or within the terminating access network itself—Netflix also agreed to pay a terminating access fee.

60. Only the four largest terminating access networks in the United States – Comcast, AT&T, Verizon, and Time Warner Cable – charge Netflix terminating access fees. Comcast, TWC, Verizon, and AT&T are the exception to Netflix's rule of not paying terminating access fees. Those four networks are able to extract terminating access fees from Netflix and others because of their market power in local broadband markets, and their share of the national market for the broadband distribution of content. A content provider like an OVD that faces high fixed costs and, therefore must have national access to consumers to maintain financial viability, has no ability to switch away from one of these four networks.

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61. I have read the declaration of Dr. David Evans, and his empirical work confirms what Netflix already knows to be true: the average U.S. consumer has no more than one—if any—broadband provider alternative. Netflix has found through market testing and firsthand experience that even when a consumer does have a broadband alternative to its current provider, consumers are highly unlikely to switch ISPs. This is true even when consumers have an option to switch, because they are unsure of whether the alternative really will provide them with better value than their current provider, and because switching costs are high.

62. Comcast's size plays a central role in its ability to harm content providers like OVDs. The more consumers to whom a terminating access network can effectively cut off access, the greater the harm to an OVD's service (or indeed a CDN's or transit provider's service). Thus, when Comcast was able to effectively degrade Netflix's service to customers accounting for over {{ }} of Netflix's total viewing hours, Netflix was left with little choice but to pay Comcast the fee it demanded. {{

}} TWC customers account for over {{ }} of Netflix's total viewing hours. If Comcast were to merge with TWC, it would have a significantly greater ability to harm Netflix. The combined entity's would {{

}}, enabling it to demand a higher price—versus the price each of those networks can already demand independently—in future negotiations. As consumers continue to shift from DSL to cable, the combined entity's share of the United States market for the broadband distribution of content would continue to grow, thereby further enhancing the combined entity's threat potential.

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63. The ability to congest transit routes also enhances a terminating access network's ability to harm OVDs. My understanding is that TWC currently has a more limited ability than Comcast to congest routes that OVDs use to deliver traffic to its network without substantially harming its own ability to send and receive traffic from the Internet. To my knowledge, TWC is not peered with some large networks such as Sprint, AT&T, and Verizon. TWC also is more dependent on transit providers such as Tata, Level 3, and XO. Because it is more dependent on transit, TWC is also more willing to interconnect on a settlement-free basis with CDNs such as Akamai, Limelight, and Yahoo. As a result of a merger with Comcast, TWC would be less dependent on transit and therefore more able to congest routes that OVDs use to reach its subscribers.

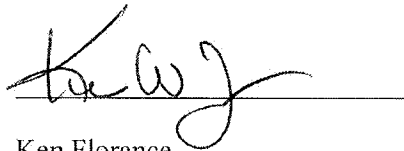
64. Further, much as has happened in past terminating access network mergers, I anticipate that if Comcast were to acquire TWC, post-merger, Comcast would begin to control the routes into TWC's network. If Comcast does that, then Netflix's bits that terminate on what used to be TWC's network will be subject to the rates set by Comcast. As such, post-merger, Netflix would likely experience an eventual increase in price on a {{ }}—and growing—share of its traffic in the United States. I do not see any force in the market that could discipline such a price increase, or any price increase that Comcast chooses to impose post-merger.

* * *

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The foregoing declaration has been prepared using facts of which I have personal knowledge or based upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my information, knowledge, and belief.

Executed on August 25, 2014.

A handwritten signature in black ink, appearing to read 'Ken W. J.', is written over a horizontal line.

Ken Florance
Vice President of Content Delivery
Netflix, Inc.

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**ECONOMIC ANALYSIS OF THE IMPACT OF
THE COMCAST/TIME WARNER CABLE TRANSACTION
ON INTERNET ACCESS TO ONLINE VIDEO DISTRIBUTORS**

David S. Evans

August 25, 2014

Table of Contents

I. Introduction	3
A. Qualifications	3
B. Assignment.....	5
C. Principal Findings.....	7
1. Broadband Competition.....	7
2. Competitive Effects	12
D. Supplemental Work and Issues Not Covered	17
E. Economic Background	18
II. Competitive Constraints on Comcast and Time Warner Cable for the Provision of Broadband Services to Consumers and OVDs.....	21
A. Alternative Methods of Streaming Video	21
B. Alternative Technologies for Providing Wired Broadband	24
C. Alternative Wired Broadband Choices Available to Households	35
D. Comparison to ISP Availability Statistics Reported by Comcast and Dr. Israel.....	40
E. Competitive Constraints on Comcast and Time Warner Cable	44
III. Competitive Effects of the Transaction	52
A. Comcast's Ability and Incentive to Foreclose OVDs	52
1. Comcast's Ability to Foreclose OVDs	53
2. Comcast's Efforts to Prevent CDNs and Transit Providers from Carrying Netflix	55
3. The Quality of Service Received by Comcast Subscribers Who Use Netflix.....	57
B. Comcast's Incentives to Foreclose OVDs.....	62
C. The Economics of the OVD Business	65
D. The Ability of ISPs to Harm OVDs	70
1. The Role of Fixed Costs for Content.....	70

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2. The Impact of Loss of Subscribers on Profits	71
E. The Economic Relationship between ISP Size, Bargaining Leverage and, the Price for Terminating Access	74
1. Bargaining Leverage and ISP Size	74
2. Netflix Payments for Access to ISPs.....	78
F. The Economic Analysis of Public Harms from the Transaction	80
1. Raising Terminating Access Prices	81
2. Bargaining Model Relied on by Dr. Israel	85
3. Comcast Strategies to Suppress Competition With MVPD Services.....	96
IV. Conclusion	99
Appendix A: Curriculum Vita	1
Appendix B: Calculations Using the NTIA's National Broadband Map	1

I. Introduction

1. My name is David S. Evans and I am an economist. This Introduction summarizes my qualifications, my assignment, and my principal findings to date.

A. Qualifications

2. I am the Chairman of Global Economics Group, LLC and based in its Boston office. I am also the Executive Director of the Jevons Institute for Competition Law and Economics and Visiting Professor at the University College London, and Lecturer at the University of Chicago Law School. I have BA, MA, and Ph.D. degrees in economics, all from the University of Chicago, where I specialized in industrial organization and econometrics. My curriculum vita is attached as Appendix A.
3. As an economist, I specialize in the field of industrial organization, which concerns the behavior of firms and their interactions, and in antitrust economics, which is the portion of industrial organization that concerns the analysis of business practices that could limit competition and harm consumers. I have a particular expertise in the study of multi-sided platforms that serve as intermediaries between several groups of customers.
4. I have written five major books and more than 100 scholarly articles, many of which concern industrial organization and antitrust. My work has been widely

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read and cited.¹ Over the last 25 years, I have taught classes on antitrust economics at Fordham University Law School, University College London Faculty of Laws, and the University of Chicago Law School. In addition, I have served on the faculty for the American Bar Association Annual Antitrust Meetings on three occasions. I have also taught various aspects of antitrust economics to judges in China and the European Union.² At their request, I have given lectures on antitrust at several competition authorities and sectoral regulators around the world, including the Federal Trade Commission.

5. I have provided expert consulting on antitrust and related regulatory matters since 1975 beginning with *U.S. v. IBM* on behalf of IBM and *U.S. v. AT&T* on behalf of the U.S. Department of Justice. I have testified, or submitted testimony, to courts and regulatory authorities, in the United States as well as Australia, Brazil, China, the European Union, Singapore, and Thailand. In addition, I have testified before several committees of the U.S. Congress

¹ I am ranked among the top 3 percent of economists according to quality-weighted citations by IDEAS/Repec, which tracks publications and citations by economists worldwide. Many of my publications and citation rankings are available at <http://ideas.repec.org/e/pev9.html>. Like many social scientists, I post much of my work on the Social Science Research Network (SSRN). As of August 5, 2014, based on quality-weighted citations, I ranked 181 out of the top 30,000 social scientists globally that SSRN reports citation data for, 85 out of the top 8,000 economics professors globally that SSRN reports citation data for, and 5 out of the top 3,000 law professors globally that SSRN reports citation data for. My SSRN publications are available at http://papers.ssrn.com/sol3/cf_dev/AbsByAuth.cfm?per_id=268756.

² In 2009 and 2010, I taught classes for judges, including basic economic principles and intellectual property, in the European Union for a program sponsored jointly by the University College London and the Toulouse School of Economics. At the request of the Chinese State Ministry of Industry and Information Technology (MIIT), in 2013 and 2014, I taught certain aspects of antitrust economics, including Internet-based and platform-based industries, to judges from the Chinese Supreme People's Court and provincial appeal courts.

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including the Senate Banking Committee, the House Financial Services Committee, and the House Oversight Committee.

6. I have conducted research, published, or submitted testimony on industries that are relevant to the proposed merger of Comcast Corporation and Time Warner Cable, Inc. (the “Transaction”), including the cable television industry, the media industry, Internet-based industries, and the telecommunications industries. I have been invited to lecture on Internet-based industries by OfCom in the United Kingdom, by the MIIT in China, and by the InfoComm Development Authority in Singapore. I made a presentation to the Organisation for Economic Co-operation and Development (OECD) Hearing on Network Neutrality in June 2011 at the request of the OECD.
7. I have personal experience with the businesses at issue in this matter. I have been a Comcast subscriber, in the Boston area, since 1991 and a Netflix subscriber, and user of its streaming video service, since 2007.

B. Assignment

8. Counsel for Netflix asked me to evaluate the effects of the proposed Transaction on competition in the provision of broadband services to providers and to consumers of online video and to competition in the distribution of video content generally.³ My research into this issue is ongoing and this declaration

³ My declaration responds in part to a declaration submitted on behalf of Comcast by Dr. Mark Israel. *See* Mark A. Israel, Implications of the Comcast/Time Warner Cable Transaction for Broadband Competition (April 8, 2014) (“Israel Declaration”). Dr. Israel focuses on the impact of the Transaction on “edge providers” that provide products and services to Internet users. My declaration focuses on a particular kind of edge provider—online video

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reports my findings to date. Counsel for Netflix has asked me to address two specific issues for this declaration.

9. (1) Counsel for Netflix asked me to examine the ability of broadband subscribers of Comcast and Time Warner Cable to switch to alternative broadband providers for the purpose of consuming online video and the ability of online video distributors (OVDs) to find alternative ways to deliver online video to those subscribers. Counsel also asked me address the evidence presented by Comcast and its economist, Dr. Mark Israel, that consumers have many choices of broadband providers.
10. (2) Counsel for Netflix also asked me to examine whether and to what extent Comcast has the incentive and the ability to limit the access of OVDs and Comcast subscribers to each other, and whether and to what extent, the proposed Transaction would increase Comcast's incentive and ability to limit that access. For the purpose of this declaration, Counsel asked me to address in particular:
 - a. The economic implications of evidence that Comcast degraded the quality of the connections between its subscribers and Netflix regarding whether Comcast has the incentive and ability to "hold-up" or otherwise exercise significant bargaining leverage over OVDs that seek access to its subscribers.
 - b. The impact of the proposed Transaction on the degree of bargaining leverage that Comcast would have over OVDs and Comcast's ability to engage in hold-up, foreclosure, and other strategies that could harm providers and consumers of online video.

distributors (OVDs), which stream video to consumers over the Internet. When I respond to Dr. Israel's claims concerning edge providers, I refer specifically to OVDs; it should therefore be understood that, when I say that Dr. Israel made a claim concerning the impact on an OVD, he is usually making that claim about the broader class of edge providers.

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- c. Whether the “bargaining theory” relied on by Comcast’s economist, Dr. Israel, provides a reliable basis for dismissing concerns that the Transaction could result in OVDs paying higher terminating access fees.
- d. Whether the theoretical and empirical arguments presented by Dr. Israel as to why the Transaction could not create any public harms are a reliable basis for dismissing concerns that that the Transaction could create public harm.
- e. Whether the Transaction would likely harm competition and consumers.

C. Principal Findings

11. The following summarizes my principal findings.

1. Broadband Competition

12. My understanding is that households require fast broadband connections to stream television shows and movies at the video quality level, and with minimal interruptions such as delays and rebuffering, that they have come to expect from other video choices in their residences. The average American household has 2.64 members.⁴ A typical household with a couple and a child will find that members are sometimes downloading Internet content simultaneously. A household usually requires advertised maximum broadband speeds of at least 10 Mbps to do so, as a result of the increased demand for video streaming for television and movies, video games, and video chat and as a result of technological improvements that increase the quality of streaming. The data show that, increasingly, households are choosing plans with faster advertised

⁴ U.S. Census Bureau, *America’s Families and Living Arrangements: 2012*, at 4 (Aug. 2013), available at <http://www.census.gov/prod/2013pubs/p20-570.pdf>.

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maximum speeds when available. Many are switching from DSL to cable and fiber for this reason.

13. Consumers of long-form online video content such as television shows and movies primarily use wired broadband connections to stream content.⁵ Netflix data confirms this. {{

}}⁶

Mobile wireless and satellite Internet Service Providers (ISPs) are not reasonable substitutes for consumers to stream movies and television shows for a variety of reasons, including speed and cost.

14. The primary competitive constraint on Comcast and Time Warner Cable, as providers of wired broadband to households, therefore comes from other wired broadband providers that households seeking access to long-form online video content could choose as alternatives to Comcast and Time Warner Cable. I have used data on the availability of broadband providers to households in Census blocks served by each of these two cable systems. The Census block is the narrowest geographic area for which data are available and usually consists of less than a hundred households.

⁵ The remainder of my declaration focuses entirely on OVDs that stream television shows, movies, and other long-form content that is ordinarily viewed by consumers on television sets. I do not consider OVDs that stream short clips, such as YouTube, that consumers commonly view on mobile devices often using broadband provided as part of their mobile wireless plans.

⁶ Information provided by Netflix.

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15. My data analysis finds that subscribers of Comcast and Time Warner Cable typically have no more than one wired broadband alternative to Comcast and Time Warner Cable. In many instances, households have no high-speed wired broadband alternative to these cable providers at all. On average, residential customers in Comcast's footprint only have 1.42 wired broadband alternatives to Comcast, 0.97 wired broadband alternatives with advertised maximum speeds of 10 Mbps or more, and 0.42 wired broadband alternatives with advertised maximum speeds of 25 Mbps or more. The data show similar results for Time Warner Cable, for the combined company, and for the combined company after divestitures.⁷ Actual sustained speeds are typically less than advertised speeds, particularly for DSL.
16. A key issue I address in this declaration is whether Comcast has the ability and incentive to degrade the quality of video streaming service by an OVD and thereby partially or completely foreclose that OVD from access to Comcast's subscribers. Comcast and its economist, Dr. Israel, claim that Comcast could not and would not do that because its subscribers would switch to another broadband provider (so Comcast is not able to foreclose), and Comcast would lose revenue from those subscribers (so Comcast has no incentive to foreclose). The data show that, in fact, Comcast and Time Warner Cable subscribers have few, if any, alternatives.

⁷ Calculation based on National Telecommunications and Information Administration's (NTIA) State Data Initiative (2014), National Broadband Map, December 31, 2013, *available at* <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcdc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>.

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17. The data that Comcast and Dr. Israel have presented on the availability of broadband alternatives to consumers are not reliable or credible. To begin with, Comcast and Dr. Israel count mobile wireless and satellite broadband providers. But, households, in fact, do not and cannot use these alternatives much for streaming television shows and movies. Comcast and Dr. Israel also count, as “available,” wired broadband companies that are present in broad geographic areas—such as designated market areas (DMAs)—that are not available to most households with residences in those areas. The result is that Comcast and Dr. Israel vastly overstate the number of alternatives available to households in the footprints of the parties to the Transaction by an order of magnitude.
18. Their data show, for example, that I personally have available up to 17 ISPs in the Boston area for wired broadband service.⁸ In fact, I only have two wired broadband providers available at my residence. One of those is Comcast, with high-speed broadband, and the other is Verizon DSL, with slow speed. To get any of the other wired alternatives identified by Comcast, I would have to move my residence to a location that receives one of these alternatives. The Census

⁸ Comcast and Time Warner Cable claim that the Boston MSA has 20 broadband competitors other than them with download speeds of at least 3 Mbps. Of these 20, only 5 provided wireless broadband. Thus, according to the Applicants, I have 17 wired providers (20 minus the 5 wireless-only providers, plus Comcast and Time Warner, both of which are active in the Boston MSA). Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Transfer Control of Licenses and Authorizations, *Applications and Public Interest Statement*, MB Docket No. 14-57, at 142 (filed Apr. 8, 2014) (“*Public Interest Statement*”).

The *Public Interest Statement* did not indicate which providers were included in this count. I have attempted to replicate their count using the same data they reference. The resulting count includes broadband resellers as well as providers that only serve governmental and/or business customers. Excluding these providers would leave the count well under the 20 providers reported by Comcast and Time Warner Cable.

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block data show most Comcast and Time Warner Cable subscribers are in the same situation.

19. The Comcast and Time Warner Cable subscribers who do have a choice of wired-broadband providers are not likely to switch wired broadband providers because (1) it is costly to do so; (2) their alternative(s) are likely to have slower broadband speeds; and (3) they face considerable uncertainty as to why their OVD service is slow and whether an available alternative would be any better. Few American households, in fact, switch wired broadband providers, except when they move their residences; many of the households that switch without changing residences are migrating from a slow DSL provider to a faster cable broadband or fiber provider.
20. There are significant barriers to entry to providing broadband service at the level of quality that consumers demand for streaming television shows and movies. It is therefore unlikely that, in the next few years, Comcast and Time Warner Cable subscribers will have significantly more alternatives available that offer them broadband speeds at least as high as those offered by Comcast and Time Warner Cable.
21. Based on these findings, I conclude that there are no significant competitive constraints, nor are there likely to be in the foreseeable future, on the ability of Comcast and Time Warner Cable to degrade the quality of streaming video to their subscribers and to thereby partially or fully foreclose OVDs from access to the subscribers of the merged firm. Their subscribers are captive because they have no reasonable alternative or one that they could switch to easily.

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22. Section II presents my analysis in more detail. In the remainder of this Declaration, the term ISP refers to a wired ISP unless noted otherwise.

2. Competitive Effects

23. I examine whether the Transaction could harm the public by significantly increasing Comcast's ability and incentive to harm OVD providers and OVD consumers. I conclude that it could harm the public and that, based on the evidence that I have reviewed and my economic analysis, the Federal Communications Commission (FCC) should not approve the Transaction. My conclusion is based on the following specific findings.
24. (1) The theoretical and empirical evidence presented by Comcast and its economist, Dr. Israel, does not support their conclusion that the Transaction could not reduce competition and harm the public. Their conclusion is based on the following propositions. First, that the provision of broadband services to American households is highly competitive. Second, that Comcast does not have the ability to harm an OVD through degrading quality because it would lose a significant amount of other Internet content for its subscribers. Third, that Comcast does not have the incentive to foreclose an OVD because it would lose subscriber revenue; this proposition is based largely on the first proposition concerning the ability of its subscribers to find other broadband alternatives.
25. The first proposition is wrong, as I have explained above. The second and third propositions are wrong as well, given that Comcast, in fact, did reduce significantly the quality of streaming services that its subscribers could obtain from Netflix. What Comcast *did do* trumps speculation on what Comcast *would*

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do according to economic theories based on various unsupported assumptions.

The basis for my conclusion is as follows.

26. In order to pressure Netflix to agree to a terminating access fee, during the course of 2013, Comcast chose not to make available uncongested settlement-free ports necessary for its subscribers to obtain consistently high quality streaming videos from Netflix. By late 2013, this decision resulted in a dramatic decrease in the quality of streaming video for Netflix subscribers who were streaming video over Comcast broadband connections. That situation continued until February 2014. At that point, Netflix agreed to pay Comcast to interconnect directly with Netflix while {{

}} The video

quality obtained by Netflix subscribers improved almost immediately after the agreement was executed. Therefore, Comcast likely had the ability to provide Comcast subscribers with high quality streaming of Netflix video content before the agreement was executed.

27. (2) A large ISP has the ability to impose significant harm on OVDs through foreclosing access, partially or fully, to its subscribers who have few if any wired broadband alternatives, thereby causing OVDs to lose the revenue and profit from the subscribers of the large ISP. That loss is more severe to the extent that OVDs have fixed costs that they cannot reduce in the near term. Some OVDs, {{

}} Since it is not possible to reduce these fixed costs,

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the loss of revenue from partial or full foreclosure to the ISP's subscribers can have a dramatic effect on profitability. A large ISP therefore has the ability to harm an OVD by degrading quality and thereby reducing the acquisition and retention of customers necessary to cover the OVD's fixed and sunk content costs.

28. Larger ISPs have a greater ability to impose harm because they can destroy a greater portion of an OVD's revenue and profit. Empirical evidence based on Netflix's experience demonstrates that:

- a. virtually all ISPs charge zero for terminating access;
- b. only the very largest ISPs charge for terminating access and have typically done so following the implementation of a hold-up strategy;
and
- c. among the very largest ISPs, {{

}}

29. Comcast, the largest ISP, can use its ability to impose harm on OVDs in a variety of ways. For example, it could use this ability to engage in a "hold-up" strategy to extract higher payments from an OVD for access to the OVD's customers, who are also Comcast subscribers. Comcast, in fact, engaged in this hold-up strategy with Netflix. Netflix had no viable economic choice but to agree to pay Comcast directly or indirectly. Comcast could also use this ability to foreclose OVDs from access to its subscribers in order to limit competition by one or more OVDs with its own profitable video distribution business.

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30. Comcast, in fact, used this ability to foreclose access to its network to “break zero.” ISPs generally do not charge content providers—directly or indirectly through transit providers and Content Delivery Networks (“CDNs”)—for access to their networks. This “zero-price equilibrium” has prevailed over the history of the Internet and holds true for all but the largest ISPs. Comcast succeeded in breaking this equilibrium through a series of efforts to raise prices to transit providers and CDNs that carried to its network and ultimately to Netflix itself. By “breaking zero” Comcast has set a precedent for charging content providers. Having set this precedent and with the scrutiny arising from the proposed Transaction behind it, Comcast will have greater ability to raise prices significantly to OVDs.⁹
31. (3) The Transaction would significantly increase Comcast’s ability to impose harm on OVDs by increasing the number of subscribers to whom Comcast could significantly reduce the quality of streaming services and thereby impose either potentially debilitating losses of revenue on OVDs, or dramatically higher terminating access costs, with similar effect. The Transaction would increase the percentage of American broadband subscribers that subscribe to Comcast broadband from {{ }} to 35.5 percent after accounting for divestitures.¹⁰ Post-Transaction, Comcast would have the ability to foreclose

⁹ As I will explain below, I believe it is likely that Comcast has chosen not to fully exercise its substantial market power over OVDs in establishing terminating access fees.

¹⁰ Here, I follow the method used by Comcast and its economists. *See* Letter from Francis M. Bruno, Counsel, Comcast, to Marlene H. Dortch, Secretary, Federal Communications

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OVDs from about {{ }} more subscribers than it would have absent the Transaction. These figures understate the likely effects of the Transaction. Comcast's share of American subscribers with broadband connections with maximum advertised speeds of 10 Mbps or more would increase from {{ }} percent to {{ }}.¹¹

32. (4) The Transaction would have unilateral price effects arising from the increase in bargaining power. Specifically, the terminating access fee for Time Warner Cable customers would {{
}}, and the level charged by Comcast would also increase substantially. It is unlikely that Comcast would pass much, if any, of these revenues back to its subscribers in the form of lower prices. As a result, the total price for connection paid by OVDs and their customers that are captive Comcast subscribers would increase.
33. (5) Dr. Israel's finding that the Transaction would not increase Comcast's bargaining power and would not increase broadband access prices is based on an economic theory that is not supported by the evidence in this matter, yields predictions that are inconsistent with common experience, and relies on implausible assumptions. It is enough to observe that if his theory were true, smaller ISPs—including the 99 percent that charge nothing for broadband

Commission, MB Docket No. 14-57 (June 27, 2014) ("June 27 Letter"); Supplemental Data to June 27 Letter, MB Docket No. 14-57 (June 27, 2014) ("Supplemental Data").

¹¹ Supplemental Data to June 27 Letter, MB Docket No. 14-57 (June 27, 2014); Industry Analysis and Technology Division, Wireline Competition Bureau Federal Communications Commission, Internet Access Services: Status as of June 2013 (June 2014), *available at* https://apps.fcc.gov/edocs_public/attachmatch/DOC-327829A1.pdf.

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connection—would, contrary to the facts, be charging as much as the very large ISPs now charge, and those smaller ISPs might even charge more than the very large ISPs. In other words, his theory implies that smaller ISPs have as much, if not more, bargaining power than very large ISPs.

34. (6) The Transaction would significantly increase Comcast’s ability to foreclose OVDs in order to maintain Comcast’s substantial market power over households in the geographic areas that it serves. The OVD industry has developed video delivery methods and business models that many consumers find very appealing. Comcast faces a long-term threat from the development of OVDs, whose services might reduce the willingness of its subscribers to pay for its profitable cable television service and increase the number of its subscribers that “cut the cord” on cable-TV. This strategy would also buy Comcast time. While engaging in this strategy, Comcast could use its considerable assets to expand its own OVD business and thereby provide its subscribers with its own OVD alternative. Moreover, the development of a robust OVD industry would increase the risk of high-speed broadband entry in the very long term, and give Comcast a further incentive to use its increased ability to foreclose OVDs to suppress the development of the industry.

35. Section III discusses my findings in more detail.

D. Supplemental Work and Issues Not Covered

36. My declaration is focused on the specific issues of broadband competition and certain competitive effects of the proposed Transaction. I reserve the right to

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supplement my findings on these issues and address additional issues in further declarations, as permitted.

37. The reader should not assume that I agree with any of the findings reached by Comcast's economists in the declarations they have filed in this proceeding because I have not responded to all of them. In fact, I have found that their substantive claims concerning market definition, competitive effects, and efficiencies from the merger are not supported by the economic analysis and evidence they present.¹²

E. Economic Background

38. Before proceeding, it is useful to describe the basic economics of the business for a wired ISP. An ISP is an intermediary that provides Internet connection between Internet users and Internet content providers. Internet content providers

¹² Comcast's economists, for example, base their conclusion that the Transaction would result in increased efficiency on the proposition that the amount of investment and innovation by a firm increases more than in proportion to its size. *See, Applications, Public Interest Statement* at 23-24; Rosston and Topper Declaration. ¶¶ 44-57; Israel Declaration. ¶¶ 107-109. They provide no empirical support in the economic literature for this proposition nor do they provide any meaningful evidence that the rate of investment and innovation by Comcast has increased more than in proportion to its size as it has grown over the last decade. The relationship between firm size and innovation is an extremely well-trod subject in economics. There is certainly no consensus among economists that the rate of innovation increases more than proportionately with firm size. *See* Wesley M. Cohen (2010), *Fifty Years of Empirical Studies of Innovative Activity and Performance*, in 1 HANDBOOK OF THE ECONOMICS OF INNOVATION 129-213 (Bronwyn H. Hall & Nathan Rosenberg ed. 2010). There is an extensive business and management literature that identifies and offers remedies for precisely the opposite problem: that larger firms have trouble innovating. *See, for example, CLAYTON M. CHRISTENSEN, THE INNOVATOR'S DILEMMA: THE REVOLUTIONARY BOOK THAT WILL CHANGE THE WAY YOU DO BUSINESS* (Harv. Bus. School Press 1997). Although I am not expressing any opinion on the efficiency of the Transaction, I do not believe that the conclusion by Comcast's economists that the Transaction would necessarily generate efficiencies is based on credible economic theory or empirical evidence.

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are sometimes called edge providers. From an economic standpoint, an ISP is a two-sided platform.¹³ ISPs enable users to download content from and upload content to the Internet, and they enable edge providers to deliver content to and receive content from users. ISPs typically use transit providers and CDNs to facilitate sending and receiving content over the Internet.

39. Multi-sided platforms have the ability to impose charges on both sets of economic agents that use their platforms. Economists have shown that multi-sided platforms may set prices below incremental cost, at zero, or below zero to maximize their profits; it may make sense to price one side low to provide value and earn profits from the other side. Many multi-sided platforms, in fact, do so, including shopping malls (shoppers get in for free), physical newspapers (often distributed at less than the cost of printing and distributing), and many Internet-based platforms (search platforms do not charge websites and searchers, typically). A price of zero is a common equilibrium for one side of the platform.
40. Most ISPs in the United States and other countries charge edge providers a price of zero (that is, they do not charge a fee) and make their profit from end users. The controversy over Net Neutrality relates to a desire on the part of very large ISPs to charge positive and differential prices to edge providers. I am not taking

¹³ See ROCHET & TIROLE for the classic article. JEAN-CHARLES ROCHET & JEAN TIROLE, *Platform Competition in Two-Sided Markets*, 1 JOURNAL OF THE EUROPEAN ECONOMIC ASSOCIATION 990, 990-1029 (2003). For a recent survey with applications to antitrust David S. Evans & Richard Schmalensee, *in The Antitrust Analysis of Multisided Platform Businesses*, OXFORD HANDBOOK ON INTERNATIONAL ANTITRUST ECONOMICS (Roger Blair and Daniel Sokol eds., Oxford University Press, forthcoming), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2185373.

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any position on this controversy in this declaration. I focus only on the issue of whether the Transaction would make this price higher or lead to other competitive distortions.

41. Economists have found that one of the key determinants of competitive constraints for multi-sided platforms is the extent to which platform users can use several platforms at the same time (multi-home) or use only one platform at the same time (single-home). For much Internet content, end users can now multi-home using their residential broadband provider, their work broadband provider, their mobile wireless broadband provider, and broadband providers to numerous Wi-Fi networks such as at Starbucks and at airports.¹⁴ The Internet content providers can multi-home as well.
42. As I describe below, however, for streaming television shows and movies, end users typically single-home on their wired broadband provider at home. As a result, OVDs must single-home on that broadband provider to reach that household. The wired broadband provider is therefore a monopoly bottleneck. Conversely, consumers can and do multi-home on several OVDs and they can easily switch between them.
43. Wired broadband providers are part of multi-product firms that offer multi-channel video programming distribution (MVPD) as well as Voice-over-IP

¹⁴ The extent to which that multi-homing would act as a competitive constraint on, for example, the residential broadband provider would depend on the extent to which consumers were willing to forgo broadband access at home and rely on the alternative means of Internet access.

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(VoIP). They typically provide bundles of these three products—ISP services, MVPD services, and VoIP services—to households. They engage in price discrimination by adjusting the prices of these bundles, and their components, to compete for consumers with different price sensitivities and alternatives for the separate components.

II. Competitive Constraints on Comcast and Time Warner Cable for the Provision of Broadband Services to Consumers and OVDs

A. Alternative Methods of Streaming Video

44. Many OVDs stream, and consumers receive, television shows, movies, and other long-form content over the Internet. The quality of these online videos for consumers depends on the device on which they receive the video and the quality of the connection to that device. Households stream most online video of movies, television shows, and other long-form content over wired broadband.
45. Consumers typically do not use mobile devices connected to mobile wireless broadband networks to consume online video content for several reasons. First, the communication providers for mobile wireless devices usually have data caps that make it expensive or impossible to view content when individuals have to rely on that communication provider. Second, the broadband speeds typically offered by the mobile wireless provider are much slower than those offered by wired providers; the slower speed can reduce the quality of the video streaming experience obtained by the consumer. In addition, the size of the screen is not ideal for watching long-form video content especially when several individuals are watching the content together, and mobile devices are not useful for

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households with multiple viewers who are streaming different content at the same time.

46. Satellite broadband is also not suitable for households that expect to stream a significant amount of video or engage in other bandwidth intensive activities because of data caps and because connection speeds tend to be slower. For example, Dish explicitly cautions potential subscribers that it is not a good substitute for wired broadband.¹⁵ It advertises its service as primarily suitable for under-served locations without access to high-speed Internet.¹⁶ Dish also explicitly warns potential customers that its service is not appropriate for

¹⁵ See *DISHNET SATELLITE – NEED TO KNOW & FAQs*, DISH, <http://www.dish.com/entertainment/internet-phone/satellite-internet/> (last visited Aug. 25, 2014) (Q: “The Internet provider at my current location is cable/fiber (FiOS, U-Verse, Comcast, Time Warner, Charter, Cox, AT&T or Verizon. Is dishNET Satellite a good solution for me?” A: “NO, As a satellite-based service, dishNET Satellite Internet has monthly data allowance limits which are much lower than cable and fiber-based Internet providers. Additionally, with satellite-based systems signal latency (delay) occurs, which may negatively affect some activities such as realtime gaming and VoIP.”).

¹⁶ *Id.* (“Q: I don't live in a metropolitan area, and my Internet options are limited to dialup and very slow DSL/cable. Is dishNET Satellite a good solution for me? A: YES, dishNET Satellite Internet was specifically designed for under-served locations without access to high-speed Internet. If you live in rural areas or even recently constructed home developments, dishNET Satellite provides Internet access that is up to 150 times faster than dial-up access.”).

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streaming television shows or movies.¹⁷ DirecTV offers similar warning to potential subscribers of its Exede Internet service.¹⁸

47. {{

}} Table 1 reports the share of Netflix viewing hours accounted for by wired broadband, mobile wireless broadband, and satellite as of May 2014.

{{

}} Approximately 56 percent of American adults have Internet access through plans from their mobile network operators that enable them to use their cell phones to access the Internet.¹⁹ Yet

¹⁷ *Id.* (“Q: I enjoy watching TV shows and movies online. Is dishNET Satellite a good solution for me? A: NO, While dishNET Satellite will support video streaming, it is best to limit these activities to short video clips like those found on YouTube® or rich content sites operated by ESPN, CNN, and the like. Streaming video uses a large amount of data. If you use dishNET Satellite to stream video from services like Netflix® or Hulu® you will quickly consume your monthly data allowance, resulting in your speed being reduced to approximately 128 Kbps.”).

¹⁸ *Satellite Internet Packages and Pricing*, Excede, <http://www.exede.com/what-is-exede> (last visited Aug. 25, 2014) (“Is Exede right for you? ...Most typical Internet users will enjoy our service tremendously — but it’s not right for everyone. For example: Gamers: The performance of some games over the Internet is very poor and some games may not work at all...Heavy downloaders: Some folks these days rely on their Internet connection to stream and download all of their movies and television. If that’s you, or if you have some other reason to do a lot of uploading or downloading of large files, Exede’s data allowance caps may not work for you.”). Excede offers data caps of 10Gb, 15Gb and 25 Gb, with unmetered usage during late night hours (midnight to 5 am or 3 am to 8 am, local time, depending on the plan). See *The Free Zone*, Excede, <http://www.exede.com/internet-packages-pricing/service-availability> and <http://www.exede.com/internet-packages-pricing/free-zones> (last visited Aug. 25, 2014).

¹⁹ Mave Duggan and Aaron Smith, *Cell Internet Use 2013*, Pew Research Center’s Internet & American Life Project (Sept. 16, 2013), available at

only {{ }} of Netflix viewing hours were consumed using this type of Internet connection.

{{	
}}	

B. Alternative Technologies for Providing Wired Broadband

48. A single HD-video stream requires a sustained speed of 5 Mbps by itself. Higher levels of video quality require faster speeds.²⁰ The average American household has 2.64 members and 39 percent of households have three or more members.²¹ A household that wants the ability to, for example, have two different members stream different HD videos or other bandwidth intensive tasks such as video chat at the same time therefore needs a broadband connection of a minimum of 10 Mbps.²²

http://www.pewinternet.org/~media/Files/Reports/2013/PIP_CellInternetUse2013.pdf. Note that this does not include users who access the Internet through a tablet.

²⁰ See *Internet Connection Speed Recommendations*, Netflix, <https://help.netflix.com/en/node/306> (last visited Aug. 17, 2014) (“5.0 Megabits per second - Recommended for HD quality”); *Streaming Movies to My TV: Frequently Asked Questions*, Amazon, <http://www.amazon.com/gp/feature.html?ie=UTF8&docId=1000578641> (last visited Aug. 25, 2014) (“What do I need to connect my TV, set-top box, or game console to the Internet? A wired connection requires the following: A broadband Internet connection (with modem provided by your ISP), with a minimum data speed of 5 Mbps.”)

²¹ U.S. Census Bureau, *America’s Families and Living Arrangements: 2012*, at 4 (2013), available at <http://www.census.gov/prod/2013pubs/p20-570.pdf>.

²² *Netflix Streaming Bandwidth: Use a Speed Test to Optimize*, Bandwidth Place, <http://www.bandwidthplace.com/netflix-streaming-bandwidth-use-a-speed-test-to-optimize-article/> (last visited Aug. 25, 2014) (“You should probably look into getting at least 10 Mbps download speeds or higher at your home if you want to video stream. Even better is 20

49. It is common for modern families to need fast broadband speeds, particularly during the evening. As long as a family wants to be able to engage in such activities some of the time, it will need a broadband connection sufficiently fast for those times.²³ Households may also require speeds of 20 Mbps or more, especially as higher quality video streams, such as Netflix's Ultra HD stream, become more prevalent.²⁴ The FCC has suggested that download speeds of more than 15 Mbps are currently necessary for households with three or more

Mbps or higher, but then you're adding more cost to your monthly bill. Getting in between 10 Mbps and 20 Mbps is probably ideal."); Federal Communications Commission, "Household Broadband Guide," *available at*: <http://www.fcc.gov/guides/household-broadband-guide>; Federal Communications Commission, *Broadband Speed Guide*, <http://www.fcc.gov/guides/household-broadband-guide>; David Salway, *How Much Broadband Speed Do You Need?*, *available at* <http://broadband.about.com/b/2011/10/01/broadbandspeedtable.htm>; Stephanie Crawford, *How Fast Should My Internet Connection Be to Watch Streaming HD Movies?*, *HowStuffWorks*, *available at* <http://entertainment.howstuffworks.com/fast-internet-connection-for-streaming-hd-movies.htm>.

²³ Robert Kenny and Tom Boughton, *Domestic Demand for Bandwidth: An Approach to Forecasting Requirements for the Period 2013-2023*, at 10 (2013), *available at*: <http://www.broadbanduk.org/wp-content/uploads/2013/11/BSG-Domestic-demand-for-bandwidth.pdf> ("Bandwidth demand is obviously driven by peaks, not average speed required..."). As this report suggests, a reasonable broadband speed is one that is sufficient for virtually all of a household's peak usage time. This report goes on to model this requirement, and in the base case assumes that ISPs need to provide enough bandwidth to cover a household's fifth busiest minute of each day, even when that minute occurs during the peak usage time and bandwidth is at its most scarce. *See Id.*, at 10, 53. Other models of broadband demand use different approaches to capacity planning, *e.g.*, assuming that capacity needs to be four times average expected load in order to accommodate household demand when it is at its highest. *See* AdTran, *Defining Broadband Speeds: Deriving Required Capacity in Access Networks* (2009), *available at* <http://www.pexx.net/pdfs/whitepapers/adtran/DerivingRequiredCapacity.pdf>.

²⁴ *See Interpreting Speed Test Results*, Geek Squad, <http://www.geeksquad.com/do-it-yourself/tech-tips/interpreting-speed-test-results.aspx> (last visited Aug. 25, 2014) ("If you have a number of devices connected to your network and want to use them at the same time without delays, [15-50 Mbps] may be the speed for you....Multiple simultaneous connections will require this level of service.")

simultaneous users or devices running more than one high demand application running at the same time, and that even faster speeds will become necessary more advanced broadband applications develop.²⁵

50. For these reasons, most ISPs, including the Applicants, recommend speeds significantly greater than even 10 Mbps for seamless streaming of video or Internet gaming—and even more for homes with more than one Internet-connected device.²⁶ Time Warner Cable, for example, suggests at least 20 Mbps if you want to “stream video,” 30 Mbps for gaming, and 50 Mbps “if you have multiple people on multiple devices in your home.”²⁷ In contrast, Time Warner Cable advertises its 3 Mbps package as only sufficient to “[s]urf the web,

²⁵ Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act, *Tenth Broadband Progress Notice of Inquiry*, GN Docket No. 14-126, 6-10 ¶¶ 11-15, 13 ¶ 23 (2014), available at http://transition.fcc.gov/Daily_Releases/Daily_Business/2014/db0805/FCC-14-113A1.pdf (“Tenth Broadband Progress Notice of Inquiry”). The FCC cited broadband demand modeling for the United Kingdom, which suggested that by 2023, the median household will require 19 Mbps, a high-use household will require 25 Mbps, and a household in the top 1% will require 35-39 Mbps (and possibly as high as 50 Mbps under certain robustness-checking scenarios). See *id.* n.38 (citing Robert Kenny and Tom Boughton, *Domestic Demand for Bandwidth: An Approach to Forecasting Requirements for the Period 2013-2023*, at 3-4 Broadband Stakeholder Group (Nov. 5, 2013), available at <http://www.broadbanduk.org/wp-content/uploads/2013/11/BSG-Domestic-demand-for-bandwidth.pdf>).

²⁶ See, e.g., *AT&T High-Speed Internet Plans – Comparison*, AT&T, <http://www.att-services.net/att-high-speed-internet-comparison.html#.U-J1ePldV8E> (last visited Aug. 25, 2014) (recommending packages offering speeds of 12 Mbps and up for customers who stream video clips and engage in teleconferencing, and speeds of 18 Mbps and up for customers who stream full-length videos and play interactive online games).

²⁷ See *High Speed Internet Plans and Packages*, Time Warner Cable, available at <http://www.timewarnercable.com/en/internet/internet-service-plans.html> (last visited Aug. 25, 2014).

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connect with friends and family through Facebook, send email, and download medium-sized files.”²⁸

51. OVD subscribers are able to watch streaming online video on lower speed broadband connections in part because OVDs adjust the picture quality to account for the lower speeds. However, as consumers’ demand for higher definition video quality increases and as the need to simultaneously support multiple devices on a single connection increases, consumers are choosing to move increasingly toward higher speed broadband connections. As I discuss below, that transition is already well under way.
52. Three major technologies in the United States provide wired broadband: cable, fiber, and DSL. The quality of video streaming for the household depends primarily on the download speed of the broadband connection for the household. DSL stands for “direct subscriber line” on the local telephone network; it is offered only by telecommunications companies. Based on December 2013 data from the National Telecommunications and Information Administration (NTIA), approximately 85 percent of the population in the United States had cable or fiber and 83 percent had DSL available.²⁹
53. Cable and fiber providers offer fast connections to most of the households in the areas they serve. Based on December 2013 NTIA data, across all cable and

²⁸ *Id.*

²⁹ Calculations based on National Telecommunications and Information Administration’s State Data Initiative (2014), National Broadband Map, December 31, 2013, *available at*: <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://medc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>.

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fiber providers, cable and fiber speeds of 25 Mbps and above were available to 93 percent of people in Census blocks where cable and fiber were offered and speeds of 10 Mbps and above were available to 99 percent.³⁰ Comcast and Time Warner Cable offer maximum advertised speeds of 25 Mbps or more to 99 percent and 86 percent of the population in their respective footprints and to 100 percent of the population for speeds of 10 Mbps or more.³¹

54. The situation is much different for DSL. Overall, across all DSL providers, only 13 percent of people in Census blocks where DSL was offered could obtain maximum advertised speeds of at least 25 Mbps. Only 60 percent could obtain speeds of at least 10 Mbps.³² Verizon, for example, did not offer a maximum

³⁰ Calculations based on National Telecommunications and Information Administration's State Data Initiative (2014), National Broadband Map, December 31, 2013, *available at*: <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcdc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>. From the NTIA data, I obtained for each Census block the highest maximum advertised download speed of any cable or fiber provider, excluding resellers and those that served only business and/or governmental customers. From the Census, I obtained the population of each Census block. For each person in a block with at least one cable or fiber provider, I counted whether the highest available cable or fiber speed was at least 10 or 25 Mbps.

³¹ Calculations based on National Telecommunications and Information Administration's State Data Initiative (2014), National Broadband Map, December 31, 2013, *available at* <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcdc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>. From the NTIA data, I obtained as list of census blocks where the companies offered download speeds of at least 25 Mbps to residential customers. I used the 2010 Census for the population estimate for each block (the most recent data available at the Census block level).

³² Calculations based on National Telecommunications and Information Administration's State Data Initiative (2014), National Broadband Map, June 30, 2013, *available at* <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcdc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>. From the NTIA data, I obtained for each Census block the highest maximum advertised download speed of any DSL provider, excluding resellers and those that served only business and/or governmental customers. From the Census, I obtained the population of each Census block.

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advertised speed of 10 Mbps or more to any of its DSL customers. AT&T, which has developed its U-verse broadband service using faster versions of DSL technology, did not offer service of 25 Mbps or more to any of its DSL customers until July 2013, and only to 7 percent of the population in its footprint in December 2013.³³

55. Consumers who stream videos can encounter periods in which the stream is delayed—the rotating gears that we see when our Internet connections are waiting to download—which reduces the quality of the viewing experience. To minimize this delay, consumers require both a fast broadband connection and a connection that can sustain throughput during the time they are watching a show or movie. Consumers that have broadband connections with maximum advertised speeds of 10 Mbps or more, or even 25 Mbps or more, may still encounter interruptions in streaming resulting from declines in the speed and throughput of their broadband provider.

For each person in a block with at least one DSL provider, I counted whether the highest available DSL speed was at least 10 or 25 Mbps.

³³ Calculations based on National Telecommunications and Information Administration's State Data Initiative (2014), National Broadband Map, December 31, 2013, *available at* <http://www.broadbandmap.gov/data-download>. I looked at all of AT&T's wired broadband offerings to residential customers nationwide. In July 2013, AT&T began offering a new tier with 45 Mbps download speeds in select cities, an improvement over its previous top tier of 24 Mbps downloads. *California and Nevada AT&T U-Verse Customers Connect Faster with New 45 Mbps Internet Service*, AT&T (Jul. 29, 2013), *available at* <http://www.att.com/gen/press-room?pid=24568&cdvn=news&newsarticleid=36772&mapcode=U-verse>; Jeff Baumgartner, *AT&T U-Verse Expands Speed Upgrade*, Multichannel News (Aug. 26, 2013), *available at* <http://multichannel.com/news/distribution/att-u-verse-expands-speed-upgrade/261341>.

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56. DSL subscribers are more likely than cable and fiber subscribers to have actual speeds that are considerably lower than the maximum advertised speeds.³⁴ The FCC has examined the relationship between actual and advertised broadband speeds. It calculated the minimum percent of the advertised speed obtained by 80 percent of the consumers 80 percent of the time, which it refers to as the “consistent speed.” Figure 1 shows the results.³⁵ The red bars show the average speed received by subscribers to these systems. The blue bars show a measure of the speed that subscribers can more or less count on. The blue bars report the minimum percent of advertised speed received by 80 percent of the consumers 80 percent of the time. The results show that most subscribers encounter significant periods of time during which they have lower speeds.

³⁴ Marguerite Reardon, *DSL Subscribers More Likely To Get Cheated On Broadband, Says FCC*, CNET (June 18, 2014), available at <http://www.cnet.com/news/dsl-subscribers-more-likely-to-get-cheated-on-broadband/>.

³⁵ Federal Communications Commission, *2014 Measuring Broadband America Fixed Broadband Report*, Chart 7 (2014), available at <http://data.fcc.gov/download/measuring-broadband-america/2014/2014-Fixed-Measuring-Broadband-America-Report.pdf>.

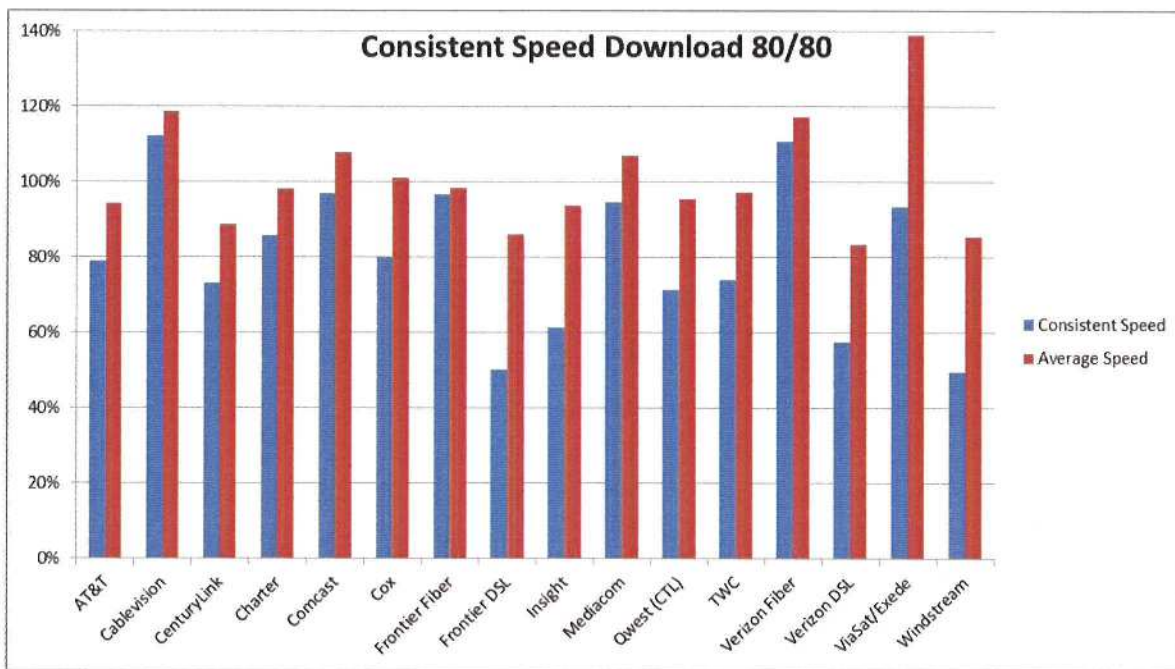


Figure 1: Consistent Speed Download 80/80

57. The results show that the DSL speeds that subscribers can count on are a much smaller fraction of maximum advertised speeds than is the case for cable and fiber subscribers. For example, the consistent speed experienced by Verizon's DSL customers was less than 60 percent of the advertised speed. By contrast, the consistent speed experienced by Verizon's fiber was well over 100 percent of the advertised speed. Using this ratio of consistent to the average speed, AT&T, CenturyLink and Qwest (CTL) are under 80 percent, and Frontier DSL and Windstream are under 60 percent. By contrast, the cable-based and fiber-based ISPs perform much better. CableVision is above 100 percent, Charter, Comcast, Cox, Frontier Fiber, and Mediacom are above 80 percent, with only

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Insight and Time Warner Cable under 80 percent (although still above 60 percent).³⁶

58. The data reported above show that the maximum advertised speeds for DSL subscribers are significantly lower than for cable and fiber subscribers, and that the speeds that DSL subscribers get consistently are even lower. Given the limitations of DSL, with increasing demand for faster Internet for various reasons, including online video streaming, American households are shifting from DSL to cable and fiber.
59. According to the Leichtman Research Group, telco broadband subscribers (excluding AT&T U-Verse and Verizon FiOS) declined by 2.76 million in 2012 and 2.82 million in 2013.³⁷ Those losses are significant: they account for more than 10 percent of the total broadband subscriber base of these telcos, 25.82 million, at year-end 2013.³⁸

³⁶ Viasat/Exede, which offers satellite based broadband was between 80 and 100 percent based on this metric.

³⁷ The figures reported elsewhere in this report on broadband subscribers are based on subscribers meeting the speed thresholds used by Dr. Israel. The data reported by Leichtman Research Group do not provide this level of detail.

³⁸ Leichtman Research Group, *3 Million Added Broadband from Top Cable and Telephone Companies in 2011* (Mar. 16, 2012), available at <http://www.leichtmanresearch.com/press/031412release.html>; Leichtman Research Group, *2.7 Million Added Broadband From Top Cable and Telephone Companies in 2012* (Mar. 19, 2013), available at <http://www.leichtmanresearch.com/press/031913release.html>; Leichtman Research Group, *2.6 Million Added Broadband from Top Cable and Telephone Companies in 2013* (Mar. 17, 2014), available at <http://www.leichtmanresearch.com/press/031714release.html>. Note that this category (total telecommunications wired broadband, less U-Verse and FiOS) consists primarily of traditional DSL, but also includes a small proportion of other technologies, such as CenturyLink's fiber-to-the-home.

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60. AT&T and Verizon experienced similar declines in DSL subscribers.
- According to AT&T's annual reports, its non-U-Verse broadband subscriber base declined by more than a third from 4.06 million in 2012 and 2.67 million in 2013.³⁹ That 1.39 million decline compares to a non-U-Verse subscriber base of 12.75 million at the end of 2011. According to Verizon's annual reports, its non-FiOS broadband subscriber base declined by 482,000 in 2012, and by 428,000 in 2013. That compares to a non-FiOS broadband subscriber base of around 3.9 million at the end of 2011. Between 2008 and 2013, Verizon reports its non-FiOS broadband subscribers declined by 2.36 million.⁴⁰ Consistent with this shift, shipments of DSL port equipment declined 22 percent in 2013 according to the market analysis firm Broadbandtrends LLC.⁴¹
61. Comcast's internal documents confirm the shift from DSL to cable. They show that Comcast's broadband penetration share of occupied households {{
}}, while the broadband penetration share for

³⁹ AT&T, Annual Report (Form 10-K for period ending 12/31/2012) (Feb. 22, 2013), *available at* <http://www.att.com/gen/investor-relations?pid=9186>; AT&T, Annual Report (Form 10-K for Period Ending 12/31/2013) (Feb. 21, 2014), *available at* <http://www.att.com/gen/investor-relations?pid=9186>.

⁴⁰ Verizon, Annual Report (Form 10-K for Period Ending 12/31/2011) (Feb. 24, 2012), *available at* <http://www.verizon.com/investor/secfiling.htm>; Verizon, Annual Report (Form 10-K for Period Ending 12/31/2012) (Feb. 26, 2013), *available at* <http://www.verizon.com/investor/secfiling.htm>; Verizon, Annual Report (Form 10-K for Period Ending 12/31/2013) (Feb. 27, 2014), *available at* <http://www.verizon.com/investor/secfiling.htm>.

⁴¹ Teresa Mastrangelo, *2013 & 4Q13 Market Share Report Summary – DSL*, Broadbandtrends (Feb. 18, 2014), *available at* http://broadbandtrends.com/yahoo_site_admin/assets/docs/BBT_2013DSLmktShare_141050_TOC.49120105.pdf.

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DSL alternatives {{ }}, from the fourth quarter of 2010 to the third quarter of 2013.⁴²

62. To persuade households to switch from available DSL alternatives to Comcast, Comcast airs commercials that emphasize its speed advantages over DSL. For example, it has a long-running series of television commercials featuring a family of turtles called the Slowskys, which insinuates that DSL speeds are adequate only for those who like things very slow.⁴³ Some examples include:

Comcast high-speed internet is fast no matter where you are, but with DSL, the farther you are from the hub or central office, the slower your connection.⁴⁴

Now that Comcast has increased its speeds, our [the Slowskys'] DSL from the phone company seems slower than ever.⁴⁵

63. Below, I report the availability of ISPs that provide maximum advertised download speeds of 10 Mbps or more and 25 Mbps or more to account for the increasing demand for high-speed wired broadband by households.⁴⁶

⁴² {{ } }

⁴³ Emma Bazilian, *The Slowskys Are Back, and This Time They Mean Business: Comcast's Turtles Leave the House*, Adweek (Oct. 10, 2013), available at <http://www.adweek.com/news/advertising-branding/ad-day-slowskys-are-back-and-time-they-mean-business-153042>.

⁴⁴ *Watch COMCAST - The Slowskys turtle commercials - Push It*, YouTube (Nov. 6, 2013), <https://www.youtube.com/watch?v=YVCwVF0zbI8>.

⁴⁵ *Watch COMCAST - The Slowskys Turtle commercial - Slow Band Wagon*, YouTube (Nov. 6, 2013), <https://www.youtube.com/watch?v=ei4ZzF0p100>.

⁴⁶ See Tenth Broadband Progress Notice of Inquiry (The FCC is currently seeking comments on raising the threshold for broadband to be considered adequate from 4 Mbps downstream to 10, 15, or 25 Mbps downstream).

C. Alternative Wired Broadband Choices Available to Households

64. Data on the availability of ISPs are generally collected and reported for various geographic areas. The fact that an ISP is available in a particular geographic area means that an ISP serves at least one household in that area. That ISP may or may not serve other households in that geographic area. Therefore, data on the availability of ISPs for any geographic area larger than a household location can overstate the availability of ISPs to a particular household in that geographic area. The overstatement increases for broader geographic areas, as I explain in more detail below.
65. To determine how many wired ISP alternatives are available to Comcast and Time Warner Cable subscribers, I used data on the number of ISPs available within a geographic area known as a “Census block.” A Census block is the smallest geographic area for which data is publicly available on the choices of ISPs that American households have. A Census block is a geographic area used by the U.S. Bureau of the Census for purposes of collecting decennial Census data. On average, it consists of 50 people or roughly 19 households.⁴⁷ A Census block is part of a Census tract, which has an average of 4,256 people or roughly 1,609 households. A Census tract is part of a county, with on average 97,011 people and roughly 36,673 households. A 5-digit zip code has an

⁴⁷ The figures of the average population in different geographic areas reported in this paragraph (such as census block or census tract) exclude geographic areas with zero population. Note that these figures include geographic areas with zero households but positive population, which occurs in cases where all of the geography’s population resides in non-household units (such as prisons, military barracks, or college dormitories).

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average of 9,475 people or roughly 3,582 households. The top 20 DMAs have between 1.3 million and 7.5 million TV households.⁴⁸ Given its small size, it is likely that if a household in a Census block has access to an ISP, then the other households do as well; that becomes less and less true as the geographic area expands.

66. I used data from the NTIA called the National Broadband Map, which contains data on ISP availability by Census block for December 2013. This data is maintained by the NTIA in cooperation with the FCC and the 50 states, the District of Columbia, and 5 territories.⁴⁹ For each Census block, this dataset contains a list of the providers offering service in that block, and the maximum advertised download speed. The dataset allows me to identify resellers, and to distinguish between providers offering service to residential, business, and/or governmental customers. These data report the number of ISPs available in a Census block for several categories of “maximum advertised speed.”
67. The FCC has described this dataset as “the best data available” for analyzing broadband availability, and as “the most comprehensive and geographically

⁴⁸ Calculations based on U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcdc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>; Nielsen, *Market Population and Rankings 2014*, at 24-29, *available at* http://www.nielsen.com/content/dam/corporate/us/en/docs/nielsen-audio/market_populations_and_rankings_2014.pdf.

⁴⁹ For the purposes of this report, I have limited attention to those areas covered in U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcdc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>. These are the 50 states, the District of Columbia, and the territory of Puerto Rico.

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granular deployment data publicly available.”⁵⁰ The FCC is working to modernize its Form 477 broadband data by incorporating many of the features of the NTIA data.⁵¹

68. I proceeded as follows for Comcast:

- a. I identified the Census blocks in which Comcast was identified as being one of the ISPs that served at least one household in that Census block.
- b. I obtained population data from the Census decennial survey for 2010 to determine the number of people living in that Census block.
- c. I identified the number of wired ISPs, in addition to Comcast, broken down into three speed categories: all ISPs, ISPs with maximum advertised speed of 10 Mbps or more, and ISPs with maximum advertised speed of 25 Mbps or more.
- d. I calculated the average number of wired ISPs available across all Census blocks in the Comcast service area weighted by the population in each block.

I followed a similar procedure for Time Warner Cable. Appendix B describes the data and my calculations in more detail.

69. Table 2 shows the results of these calculations. The figures are all based on the number of ISPs *in addition to Comcast* or *in addition to Time Warner Cable*.

The average Census block served by Comcast has 1.42 alternative ISPs, 0.97 alternative ISPs with maximum advertised speeds of 10 Mbps or more, and 0.42

⁵⁰ *Seventh Broadband Progress Report and Order on Reconsideration*, GN Docket No. 10-159, at ¶ 1 (2011), available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-11-78A1.pdf; *Eighth Broadband Progress Report*, GN Docket No. 11-121, at ¶¶ 17, 28, 30 (2012), available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-12-90A1.pdf.

⁵¹ In the Matter of Modernizing the FCC Form 477 Data Program, *Report and Order*, WC Docket No. 11-10, at ¶¶ 2-3 (2013), available at https://apps.fcc.gov/edocs_public/attachmatch/FCC-13-87A1.pdf.

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alternative ISPs with speeds of 25 Mbps or more. The results for Time Warner Cable are similar, as are the results for the Census blocks served by either Comcast or Time Warner Cable.

70. A large portion of the population in the Comcast and Time Warner Cable footprints do not have access to fast broadband alternatives. For the combined footprint about 27 percent of the population does not have access to a wired alternative with speed of 10 Mbps or faster and about 64 percent does not have access to a wired alternative with speed of 25 Mbps or faster.⁵²
71. These general results also hold true for the combined entity (with and without the planned divestitures) as shown in the last two columns of the table.

⁵² For these calculations, in the small number of census blocks where Comcast and Time Warner offered maximum download speeds of less than 10 Mbps (or 25 Mbps), I treated ISPs with maximum download speeds equal to or greater than Comcast and Time Warner Cable as if they had speeds of 10 Mbps (or 25 Mbps).

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Table 2: Wired Broadband Alternatives to Comcast and Time Warner Cable

<i>Metric</i>	<i>Comcast Footprint</i>	<i>Time Warner Cable Footprint</i>	<i>Combined Footprint</i>	<i>Combined Footprint, Accounting for Divestitures</i>
Average number of wired alternatives, population-weighted	1.42	1.09	1.29	{{ }}
Percentage of population with no wired alternative	2.5%	7.3%	4.3%	{{ }}
Average number of wired alternatives >= 10 Mbps, population-weighted	0.97	0.78	0.90	{{ }}
Percentage of population with no wired alternatives >= 10 Mbps	23.5%	31.7%	26.6%	{{ }}
Average number of wired alternatives >= 25 Mbps, population-weighted	0.42	0.39	0.41	{{ }}
Percentage of population with no wired alternatives >= 25 Mbps	62.9%	64.0%	63.4%	{{ }}
Average number of wired alternatives with equal or greater download speed, population-weighted	0.08	0.31	0.16	{{ }}
Percentage of population with no wired alternatives with equal or greater download speed	92.3%	72.5%	84.8%	{{ }}

Sources: National Telecommunications and Information Administration's State Data Initiative (2014), National Broadband Map, December 31, 2013, *available at* <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcde.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>; Letter from

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Kathryn A. Zachem, Comcast, et al, to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (July 11, 2014) (“*July 11 Letter*”), Appendix B.1 and Appendix C.1; Letter from Francis M. Bruno, Comcast, to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (July 28, 2014) (“*July 28 Letter*”), Appendix A.2, Appendix A.4, and Revised Appendix A to July 11 Letter.

D. Comparison to ISP Availability Statistics Reported by Comcast and Dr. Israel

72. Comcast and Dr. Israel have reported various statistics on the availability of wired ISPs for various broad geographic areas ranging up to the DMA level. These statistics overstate the actual availability of wired ISPs to households in service areas for Comcast and Time Warner Cable. (As noted above, mobile wireless and satellite ISPs are not reasonable substitutes for households that want to stream television shows and movies, and therefore they should not be counted at all.)
73. To understand the nature of the overstatement, I will use myself as an example. I have a residence in Boston in Census block 25025-0201.01-4002. The NTIA data show that for wired ISPs, I have access to Comcast (which offers high-speed cable to my home) and Verizon (which offers slow-speed DSL to my home).⁵³ There is one additional ISP available—RCN—in the zip code (02114) and county (Suffolk) in which I live. However, I could not obtain service from RCN at my current place of residence as I verified by checking their website.

⁵³ For this example, I have used the NTIA data from June 30, 2013, rather than the most recent data from December 31, 2013. I do this in order to make these ISP counts comparable to those in Comcast and Time Warner’s *Public Interest Statement*. At the time the Statement was filed, the June 2013 data were the most recent data available. The results would be similar for December 2013.

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74. There are even more wired ISPs available to households in my Core Based Statistical Area⁵⁴ (14460, Boston-Cambridge-Quincy, MA-NH): Bidford Internet, BELD Broadband, TDS Telecom, Time Warner Cable, Norwood Light Broadband, and Granite State Telephone. But none of these ISPs are actually available at my current residence. Finally, 14 wired ISPs serve the Boston DMA; of these, only Comcast and Verizon are actually available to provide the residence where my family currently lives with wired broadband service. The remaining 12 ISPs are not relevant at all to me because, unless I move my residence, I cannot in fact obtain wired broadband service from them.
75. The Comcast service available to me is much faster, with maximum advertised download speeds of up to 105 Mbps, whereas Verizon only offers download speed of up to 3 Mbps. The Verizon package available for my residence does not offer TV directly; instead Verizon offers to bundle DirecTV with its ISP service. Verizon is slightly less expensive than Comcast. Tables 3 and 4 show the offers available to me from both of these wired providers. As a heavy user of the Internet, Verizon would not be a feasible option for my household, even if it were much cheaper.

⁵⁴ Core Based Statistical Areas “consist of the county or counties or equivalent entities associated with at least one core (urbanized area or urban cluster) of at least 10,000 population, plus adjacent counties having a high degree of social and economic integration with the core as measured through commuting ties with the counties associated with the core.” United States Census Bureau Geographic Terms and Concepts – Core Based Statistical Areas and Related Areas, *available at* http://www.census.gov/geo/reference/gtc/gtc_cbsa.html.

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Table 3: Comcast Triple Play Offers (New Residential Customers at my Address in Boston)

<i>\$/Month (first year)</i>	<i>\$/Month (second year)</i>	<i>\$/Month (thereafter)</i>	<i>Channels</i>	<i>Mbps</i>	<i>Phone</i>	<i>Agreement</i>	<i>Bonus</i>
79.99	124.99	146.99 to 147.99	140	25	Unlimited Nationwide Talk & Text	Two years	\$100 Visa Prepaid Card
89.99	125.99	146.99 to 147.99	140	105	Unlimited Nationwide Talk & Text	Two years	\$100 Visa Prepaid Card
99.00	126.99	146.99 to 147.99	140	25	Unlimited Nationwide Talk & Text	None	
139.99	144.99	154.99	230	105	Unlimited Nationwide Talk & Text	Two years	\$100 Visa Prepaid Card
149.99	174.99	174.99	230	105	Unlimited Nationwide Talk & Text	None	
159.99	159.99	174.99	260	105	Unlimited Nationwide Talk & Text	Two years	\$250 Visa Prepaid Card
159.99	184.99	184.99	260	105	Unlimited Nationwide Talk & Text	None	DVR Service Included
199.99	204.99	214.99	260	105	Unlimited Nationwide Talk & Text	Two years	\$250 Visa Prepaid Card
199.99	224.99	224.99	260	105	Unlimited Nationwide Talk & Text	None	DVR Service Included
129.99	154.99	154.99	220	25	Unlimited Nationwide Talk & Text	None	

Source: *XFINITY Triple Play by Comcast*, Comcast,
<http://www.comcast.com/Corporate/Learn/Bundles/bundles.html>(last visited Aug. 5, 2014).

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Table 4: Verizon Plus DirecTV Bundles (New Residential Customers at my Address in Boston)

<i>\$/Month (first two years)</i>	<i>\$/Month (thereafter)</i>	<i>Channels</i>	<i>Mbps</i>	<i>Phone</i>	<i>Term</i>	<i>Bonus</i>
69.99	74.99	DirecTV 205	0.5 to 1	Regional Calling	Two Years (TV)	NFL Sunday Ticket 2014; Free HBO, Starz, Showtime, and Cinemax for 3 months
79.99	84.99	DirecTV 205	1.1 to 3	Regional Calling	Two Years (TV)	NFL Sunday Ticket 2014; Free HBO, Starz, Showtime, and Cinemax for 3 months; Wireless router; activation fees waived
94.99	99.99	DirecTV 225	1.1 to 3	Unlimited Calling	Two Years (TV)	NFL Sunday Ticket 2014; Free HBO, Starz, Showtime, and Cinemax for 3 months; Wireless router; activation fees waived

Source: *Shop Verizon Deals and Compare*, Verizon,
<http://www.verizon.com/home/shop/shopping.htm> (last visited Aug. 5, 2014).

76. Based on the data I have presented, the situation of my household is similar to many households that use Comcast as their ISP. Like my household, most of those households have about one alternative and the preponderance of households do not have any alternative that is fast enough for a household with several active Internet users or users that want to avail themselves of the highest quality video streaming now available. The same statement is true for Time Warner Cable, for the combined footprints, and for the combined companies after the planned divestitures.

77. I therefore recommend that the FCC not rely on the ISP availability data submitted by Comcast and Dr. Israel.⁵⁵ Their data do not provide any meaningful information on the availability of broadband service to Comcast or Time Warner Cable subscribers or the state of competition in the delivery of broadband service. The numbers presented by Comcast and Dr. Israel vastly overstate the number of broadband services available to most Comcast and Time Warner Cable ISP subscribers. The flawed data they provided undergird many of their substantive claims, as I discuss in Section III, and therefore make those claims dubious as well just for that reason.

E. Competitive Constraints on Comcast and Time Warner Cable

78. With this background, I now examine whether Comcast or Time Warner Cable face significant competitive constraints on their ability to reduce the quality of streaming service received by their subscribers from an OVD. Specifically, I examine whether it is likely that a significant number of subscribers would switch to an alternative cable provider if Comcast or Time Warner Cable imposed a significant reduction in the quality of streaming services from an OVD and thereby render that degradation unprofitable to these cable providers.⁵⁶

⁵⁵ *Public Interest Statement*, at 141-142.

⁵⁶ In analyzing competitive constraints here I am adopting a test for significant market power that is weaker (in the sense of favoring the Applicants) than a traditional SSNIP test. I am basically asking whether the Applicants could foreclose an OVD without suffering a significant reduction in profits.

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79. The typical household that wants broadband for the purpose of streaming online video content has limited choices, according to the data reported above. The typical household would require download speed of 25 Mbps or more to provide high quality online video streaming for the OVD services available in the next few years. The typical household has no more than one alternative, and often less. Around 64 percent of households in the Comcast and Time Warner cable service areas only have DSL as an alternative. Therefore, households that subscribe to Comcast or Time Warner Cable typically have few if any relevant substitutes for receiving adequate ISP service for streaming from OVDs.
80. These alternative ISP providers impose weak competitive constraints on Comcast and Time Warner Cable because the cost of switching to an alternative is relatively high. These costs include:
- Time and inconvenience cost of cancelling service. Customers typically need to call to cancel service, including talking to customer service representatives who have financial incentives to dissuade the customer from cancelling.⁵⁷ Customers also need to return their equipment, often incurring the effort of waiting in line at a service center.
 - Set-up and installation fees for new service. Customers may need to pay fees to set up new broadband service.⁵⁸

⁵⁷ Danielle Muoio, *That Comcast Customer Service Rep Wasn't Going Rogue*, Businessweek (July 18, 2014), available at <http://www.businessweek.com/articles/2014-07-18/that-comcast-customer-service-rep-wasnt-going-rogue>.

⁵⁸ In an FCC survey of consumer broadband purchasing behavior, 50 percent of consumers who had considered switching broadband providers but who did not switch indicated that paying setup or installation fees for new service was a major factor. See FCC, *Broadband decisions: What drives consumers to switch – or stick with – their broadband Internet provider*, Working Paper, December 2010, Table 3.

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- Time and inconvenience costs of getting new service established to residence. Customers need to get the new broadband service set up and connected, which often involves waiting for a service call at home.⁵⁹
- Having to change the bundle of services, including potential loss of bundled discounts. A customer who also subscribes to television and/or telephone service from her broadband provider would need to either also switch those services, incurring further switching costs, or potentially lose discounts associated with purchasing a bundle of services from the broadband provider.⁶⁰
- Cancellation fees for service. Customers who have signed contracts may be subject to early termination fees.⁶¹

81. In fact, American households seldom switch their ISPs except when they move residences and have to incur these switching costs anyway. An FCC study examined switching in 2010 and found that, after excluding people who moved, 11.6 percent of American households switched their ISP provider during a year.⁶²

⁵⁹ In an FCC survey of consumer broadband purchasing behavior, 40 percent of consumers who had considered switching broadband providers but who did not switch indicated that the hassle of getting new service installed was a major factor. *Id.*

⁶⁰ *See Id.* In an FCC survey of consumer broadband purchasing behavior, 44 percent of consumers who had considered switching broadband providers but who did not switch indicated that having to change the current bundle of services was a major factor. *See* FCC, “Broadband decisions: What drives consumers to switch – or stick with – their broadband Internet provider,” Working Paper, December 2010, Table 3. An economic study found that bundling did reduce customer switching. *See also*, Jeffrey Prince and Shane Greenstein, *Does Service Bundling Reduce Churn?*, Working Paper, April 2013, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1966221.

⁶¹ In an FCC survey of consumer broadband purchasing behavior, 47 percent of consumers who had considered switching broadband providers but who did not switch indicated that terminations fees were a major factor. *See* FCC, *Broadband decisions: What drives consumers to switch – or stick with – their broadband Internet provider*, Working Paper, December 2010, Table 3.

⁶² *Id.* at 5-6. (The study reported that “roughly 17% switch ISPs in a given year, with roughly 7% have switched and changed their residence at the same time.” The study also noted that “of those who moved, 50% also changed their Internet service provider.”) If 50 percent of

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82. A considerable portion of the 11.6 percent that did switch, despite not having changed residences, switched from DSL to cable or fiber. According to the FCC, “faster or higher performance Internet connection” is the top reason that households who did not move changed their broadband provider.⁶³ We also know that those who switched must include many households switching from DSL to cable given the data reported above on the sharp decline in the number of DSL subscribers.⁶⁴ Therefore, the fraction of households that are switching from a broadband provider to another alternative is likely much lower than 11.6 percent, and the fraction of households that are switching from a DSL provider to a cable provider is likely to be much higher. Given that DSL is the most common alternative to Comcast and Time Warner Cable subscribers, I would expect that the switching rate for customers of these cable providers is very low.
83. Comcast and Time Warner Cable subscribers also face uncertainty in switching ISP providers for the purpose of obtaining higher quality online video streaming. They have no real way to know whether any decline in quality of online video

the respondents that changed residences switched ISPs and 7 percent of respondents switch ISPs and changed residences in a given year, then 14 percent of respondents changed residences. And 10 percent of respondents switched ISPs without moving out of the 86 percent of respondents that did not change residences over the year. The proportion of respondents that did not change residences and did switch ISPs is 10/86 or about 11.6 percent.

⁶³ *Id.* at 9.

⁶⁴ *See id.* In the FCC study, the first and third cited reasons for switching among those that switched ISPs without changing residences was “Getting a faster or higher performance Internet connection” (cited by 55 percent) and “Getting a bundle of Internet, TV and phone services from a single company” (cited by 44 percent). Both of the reasons are likely to be applicable to those switching from traditional DSL, as it is slower and cannot provide television services. The second reason cited was “Getting a better price for Internet service” (cited by 54 percent), which could apply generally for switching from all types of providers.

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streaming they are receiving is caused by their ISP or by their OVD. They then face uncertainty over the quality of online video streaming they will receive from the alternative ISP that is available to them. The most common wired ISP alternatives for Comcast and Time Warner Cable subscribers are DSL service from AT&T and Verizon.⁶⁵

84. For many consumers, the value provided by a particular OVD is likely to be small relative to the overall value provided by the ISP. ISPs provide access to all Internet content, including other OVDs. They also typically provide bundles that include extensive video programming, VoIP, as well as broadband. Consumers can easily switch to other OVDs or the cable channels and Video-on-Demand services provided by the MVPD. Comcast and Time Warner Cable both offer significant amounts of television, movies, and other long-form content that substitute for OVD content. The decline in the overall value of the

⁶⁵ The overlap between the wired footprints of the combined Comcast/Time Warner Cable company (accounting for the divestiture transactions) and AT&T contains 51 percent of the population of the combined company ({ { } } percent after accounting for the divestiture transactions). The comparable figures for Verizon are 24 percent ({ { } } percent after accounting for the divestiture transactions). No other wired ISP has an overlap that accounts for more than 15 percent of the population of the combined company's footprint ({ { } })). Calculation is based on National Telecommunications and Information Administration's State Data Initiative (2014), National Broadband Map, December 31, 2013, *available at* <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcde.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>; Letter from Kathryn A. Zachem, Comcast, et al, to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (July 11, 2014) ("*July 11 Letter*"), Appendix B.1 and Appendix C.1; Letter from Francis M. Bruno, Comcast, to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (July 28, 2014) ("*July 28 Letter*"), Appendix A.2, Appendix A.4, and Revised Appendix A to July 11 Letter.

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service provided by Comcast or Time Warner Cable, as a result of one of these ISPs reducing the quality of streaming for a particular OVD, is therefore likely to be quite small. For these reasons alone, it is likely that the demand for ISP service from Comcast and Time Warner Cable is highly inelastic with respect to a change in the quality of streaming for a particular OVD.

85. There are also high barriers to entry into providing wired broadband service to a geographic area and to households within a geographic area that a provider does not currently serve. Wired ISPs invest in making wires available to households in areas where they have regulatory approval to provide service. Over relatively long periods of time, the availability of wired service to a residence is predetermined by decisions made by regulators and providers. Obtaining approvals to provide wired service in a geographic area is generally difficult and time consuming.⁶⁶
86. Incumbent cable providers lobby against the approval of municipal broadband projects directly or through proxies.⁶⁷ For example, a lobbying group with

⁶⁶ Arthur Harding and Paul W. Jamieson (1999), *Dismantling the Final Regulatory Entry Barriers: A Call for the FCC to Assert its Preemptive Authority*, 12 Harvard J. of Law and Tech., 3; Kevin J. Martin (FCC Commissioner), “*Framework for Broadband Deployment*, Remarks Prepared for the National Summit on Broadband Deployment, October 26, 2001, available at <http://transition.fcc.gov/Speeches/Martin/2001/spkjm101.txt>; Robert Hahn and Scott Wallsten (2006), *The Economics of Net Neutrality*, 3 Economists’ Voice 6; Berin Szoka, Matthew Starr, and John Henke (2013), “Don’t Blame Big Cable – It’s Local Governments That Choke Broadband Competition,” *Wired* (July 16, 2013), available at <http://www.wired.com/2013/07/we-need-to-stop-focusing-on-just-cable-companies-and-blame-local-government-for-dismal-broadband-competition/>.

⁶⁷ Brian Fung, *Big Cable may have felled Seattle’s mayor, but it couldn’t stop this Colo. Project*, *Washington Post*, Nov. 6, 2013, available at <http://www.washingtonpost.com/blogs/the-switch/wp/2013/11/06/big-cable-helped-defeat->

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members including Comcast and Time Warner Cable wrote proposed legislation that “would make it almost impossible for cities and towns to offer broadband services to residents and would perhaps even outlaw public-private partnerships like the one that brought Google Fiber to Kansas City.”⁶⁸ In California, restrictive regulations have led Google decline to provide Google Fiber in California to date.⁶⁹ Google Fiber temporarily abandoned efforts in Overland Park, Kansas for nine months because of difficulties in obtaining approvals.⁷⁰

seattles-mayor-mcginns-but-they-couldnt-stop-this-colorado-project/ (“Across the United States, cable lobbyists have helped erect legal barriers to stifle competition from public utilities. Industry groups have repeatedly filed lawsuits to block city attempts to roll out fiber service. And they have also opposed public referendums to allow cities to build their own networks.”).

⁶⁸ Jon Brodtkin, *Who wants competition? Big cable tries outlawing municipal broadband in Kansas*, Arstechnica (Jan. 31, 2014), available at <http://arstechnica.com/tech-policy/2014/01/who-wants-competition-big-cable-tries-outlawing-municipal-broadband-in-kansas/>. When Comcast was asked if it had any input in writing the bill, it stated that it “has less than 5 percent of the subscribers in the state,” and that Cox and Eagle are the dominant players in Kansas.” See also Emily Badger, *How the Telecom Lobby is Killing Municipal Broadband—Companies like Comcast are spending big bucks to prevent competition from local governments*, CityLab (Nov. 4, 2011), available at <http://www.citylab.com/tech/2011/11/telecom-lobby-killing-municipal-broadband/420/>.

⁶⁹ Steve Blum, *Nimby Laws Will Keep Google Fiber Out of Its Own Backyard*, Tellus Venture Associates (June 8, 2014), available at <http://www.tellusventure.com/blog/nimby-laws-will-keep-google-fiber-backyard/>; Walter Russel Mead and Staff, *Google Fiber Skips Over California’s Red Tape*, American Interest (Apr. 11, 2013), available at <http://www.the-american-interest.com/blog/2013/04/11/google-fiber-skips-over-californias-red-tape/>; Alyson Raletz, *Google Fiber Skips California in Favor of Gigabit-Friendly Locals*, Kansas City Business Journal (May 29, 2013), available at <http://www.bizjournals.com/kansascity/blog/2013/05/google-fiber-california-network.html?page=all>.

⁷⁰ Angela Moscaritolo, *Google Fiber Get Greenlight in Overland Park, Kansas*, PC Magazine (July 8, 2014), available at <http://www.pcmag.com/article2/0,2817,2460601,00.asp>.

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87. Even when it is possible to obtain approvals, it takes time to build the network and it is very costly to do so.⁷¹ For example, it took Google Fiber almost twenty months to lay enough fiber to pass (but not connect) 149,000 households in Kansas City.⁷² One estimate placed the cost to pass the 149,000 household at \$84 million, or \$564 per household passed, with additional costs of \$464 to connect a household for broadband and \$794 to connect a household for broadband and pay television.⁷³ In December 2013, almost four years after announcing its efforts, Google Fiber's coverage area only includes 0.005 percent of the U.S. population.⁷⁴ That is, Google Fiber reaches only five out of 100,000 people. That makes it one of the smaller wired broadband providers in the country.
88. A system may have decided not to wire a particular neighborhood even if it has permission to do so. In that case, a household in that neighborhood could not obtain service. Recognizing this, some ISPs such as Comcast provide information on their websites that inform households whether service is available or not at their precise address. There are therefore barriers to entry

⁷¹ Peter Cohen, *Will Google Fiber Waste \$28 Billion?*, Forbes (Aug. 21, 2012), available at <http://www.forbes.com/sites/petercohan/2012/08/21/will-google-fiber-waste-28-billion/>; Ingrid Lunden, *Analyst: Google Will Spend \$84M Building Out KC's Fiber Network to 149K Homes; \$11B If It Went Nationwide*, TechCrunch (Apr. 8, 2013), available at <http://techcrunch.com/2013/04/08/google-fiber-cost-estimate/>.

⁷² *Id.*

⁷³ *Id.*

⁷⁴ Calculation based on National Telecommunications and Information Administration's State Data Initiative (2014), National Broadband Map, December 31, 2013, available at <http://www.broadbandmap.gov/data-download>; U.S. Census Bureau, 2010 Census, Summary File 1, available at <http://mcdc.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>.

both into the geographic footprint served by the ISP and to particular households in that footprint.

89. Given the lack of reasonable substitutes, inelastic demand, the high cost of switching, and entry barriers, I conclude that there are extremely weak competitive constraints on the ability of Comcast or Time Warner Cable to reduce the quality of streaming service received by its subscribers from a particular OVD. For all intents and purposes, the Applicants' subscribers have nowhere else to turn, and OVDs have nowhere else to turn to reach those subscribers.

III. Competitive Effects of the Transaction

90. I now turn to the competitive effects of the Transaction.

A. Comcast's Ability and Incentive to Foreclose OVDs

91. Based on my review of data from Netflix, conversations with Netflix executives, and review of third-party data, I have concluded that Comcast has the ability and incentive to degrade significantly the quality of service that its subscribers obtain from an OVD. It has the ability since it has in fact done so, and it has the incentive because, by revealed preference, it has chosen to do so.
92. Time Warner Cable also has the ability and incentive to foreclose OVDs. However, it would have a greater ability and incentive if it were part of Comcast. Comcast would have a greater ability and incentive to foreclose OVDs if it controlled access to more subscribers as a result of its acquisition of Time Warner Cable.

93. The evidence and economic analysis I discuss below shows that the Transaction would result in a significant increase in Comcast's already substantial market power, and that Comcast would likely use that enhanced market power to harm providers and consumers of online video.

1. Comcast's Ability to Foreclose OVDs

94. Comcast is able to foreclose OVDs partially or fully as a result of the following factors.⁷⁵
95. Comcast controls all of the entry points into its network. Through its control of these entry points Comcast can determine whether and how its subscribers receive the content delivered by a CDN, transit provider, or any other entity that wants to access its subscribers through its network. Most importantly, it can also determine the quality of the connections by limiting the amount of content that flows between these entry points and the subscriber and, thereby, the speed and quality of delivery of that content.
96. Comcast, like a handful of other very large ISPs, is directly connected to a large portion of the Internet, such as through direct peering agreements with other large ISPs. It does not rely on transit providers the way smaller ISPs do to access the rest of the Internet. Unlike smaller ISPs, Comcast can allow the paths used by transit providers to congest without the same impact on the ability of its subscribers to access the Internet.

⁷⁵ My discussion in this section is based on conversations I have had with Netflix business people and on Mr. Florance's declaration. Declaration of Ken Florance, August 25, 2014 ("Florance Declaration").

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97. ISPs typically allocate ports across traffic sources to accommodate the traffic demanded by their subscribers and increase the number of ports when necessary. Adding a port is generally easy and relatively inexpensive. ISPs do not typically degrade the quality of service obtained by their subscribers by failing to make the necessary number of ports available.
98. Like other ISPs, Comcast has the ability to increase or decrease the amount of capacity available to a CDN or transit provider by increasing or decreasing the number of ports on the routes used by the CDN or transit provider. It is my understanding that the contracts entered into between OVDs, CDNs, and transit providers with Comcast to increase the quality of connections primarily involve the number of ports (or amount of port capacity) made available, with certain service quality commitments relating to the percent of packets lost and latency.
99. Netflix's experience in delivering content to Comcast's subscribers demonstrates that Comcast has the technical ability to foreclose OVDs from obtaining access to Comcast's subscribers. Further, Comcast can do that without losing significant other Internet content that its subscribers want, contrary to what Dr. Israel claims.⁷⁶ In particular, it can allow its connections with transit providers to become congested without significantly affecting access to the Internet for its subscribers. As I show next, Comcast made business and technical decisions that prevented some Comcast subscribers from viewing Netflix content and degraded the viewing experience for others. After Netflix

⁷⁶ Israel Declaration ¶¶ 34, 70, 83-84.

entered into a contract with Comcast, in which it agreed to allocate additional port capacity to support Netflix's traffic, the quality of service returned to normal almost immediately.

2. Comcast's Efforts to Prevent CDNs and Transit Providers from Carrying Netflix

100. In 2009-2010, as part of its strategy to break the zero price equilibrium then prevailing, Comcast undertook efforts to limit Netflix's access to Comcast subscribers other than through paths on which Comcast collected a termination fee.⁷⁷ These efforts demonstrate that Comcast has the ability and incentive to partially or fully foreclose OVDs and other edge providers, since it has done so to both Netflix and to transit providers and CDNs that Netflix has used.
101. First, not long after Netflix started using Akamai for its CDN services, Comcast did not allocate sufficient ports to its routes with Akamai, thereby causing Netflix's connection with Akamai to congest. Netflix's understanding is that Comcast demanded a terminating access fee from Akamai in order to allocate additional ports to Akamai and that Akamai acquiesced.⁷⁸
102. A similar pattern occurred with Netflix's use of Limelight's CDN service. At first, Comcast would allocate additional capacity as needed for Limelight.⁷⁹ Then, around August of 2010, Comcast demanded a terminating access fee from

⁷⁷ My discussion in this section is based on conversations I have had with Netflix business people and on Mr. Florance's declaration.

⁷⁸ Florance Declaration ¶ 32.

⁷⁹ *Id.*

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Limelight to interconnect.⁸⁰ Limelight experienced significant congestion in its connections with Comcast when it refused to pay. Netflix's understanding is that Limelight acquiesced to Comcast's demand for a terminating access fee by October 2010.⁸¹

103. In November 2010, Netflix reached an agreement to use Level 3 as a CDN, because Level 3 had a long-standing settlement-free peering agreement with Comcast.⁸² About a week after the agreement went into effect, Comcast demanded a new terminating access fee from Level 3.⁸³ After three days of heavy congestion of Level 3's connections to Comcast, Level 3 agreed to the pay the new terminating access fee.⁸⁴
104. Netflix could have entered into deals with those transit providers or CDNs that had agreed to pay Comcast terminating access fees. However, in addition to bearing the cost of those fees (which were passed on by transit providers and CDNs to Netflix), Netflix would then expose itself to future, unpredictable, and financially risky increases in the terminating access fees charged by Comcast to those transit providers and CDNs.⁸⁵ Comcast could, at any point, engage in the hold-up strategy that I have outlined to increase those fees by congesting the transit providers and CDNs that carried Netflix, unless they paid higher fees.

⁸⁰ *Id.* ¶ 34.

⁸¹ *Id.* ¶ 35.

⁸² *Id.* ¶ 36.

⁸³ *Id.* ¶ 37.

⁸⁴ *Id.* ¶ 38.

⁸⁵ *Id.* ¶ 39.

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Therefore, Netflix continued to attempt to find routes into Comcast that were not subject to terminating access fees. Ultimately, Netflix purchased transit from all of the six transit providers that operate in the United States and did not pay Comcast a terminating access fee.⁸⁶ Comcast failed to allocate sufficient ports to these transit providers and allowed all of the routes used by those transit providers to congest, with the exception of one transit provider, {{ }}.⁸⁷ {{

}}⁸⁸

105. In each of these cases, Comcast made business and technical decisions that resulted in congestion and the likely degradation of the quality of Comcast's service to its own subscribers.

3. The Quality of Service Received by Comcast Subscribers Who Use Netflix

106. Comcast's decision not to allocate sufficient ports to transit providers limited the ability of Netflix to connect with Comcast subscribers and Comcast subscribers to connect with Netflix. All of the paths available to Netflix to deliver content to its subscribers using Comcast as an ISP—on which Comcast did not collect a

⁸⁶ *Id.* ¶ 48.

⁸⁷ As is discussed in Mr. Florance's declaration, of those six transit providers—Cogent, Level 3, NTT, TeliaSonera, Tata and XO—Cogent, Level 3, and Tata interconnected directly with Comcast, while NTT, Telia and XO connected to Comcast through settlement-free routes with Cogent and Tata. Level 3 peered with Comcast under an arrangement that was settlement free up to a certain ratio of traffic between the two networks and Level 3 paid Comcast for any traffic above that threshold. *Id.*

⁸⁸ *Id.* ¶ 49.

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terminating access fee—were or became congested over the course of 2013.

The only uncongested paths potentially available to Netflix were through CDNs, which had acquiesced to paying Comcast a terminating access fee, or through providers such as Verizon and AT&T that sought to extract their own terminating access fees.

107. The quality of the video transmission received by Comcast's wired broadband subscribers who used Netflix declined over the course of 2013 as a result of Comcast limiting the ability of Netflix to reach these subscribers. As I will show below, the decline in these quality measures was gradual during most of 2013. By late 2013, however, Comcast's business and technical decisions resulted in significant congestion that caused a precipitous drop in the quality of the video transmission received by Comcast subscribers when they tried to stream Netflix. This phenomenon is similar to traffic congestion that we experience as drivers. As traffic increases, but the number of lanes available for that traffic does not, traffic slows down. Eventually that results in traffic jams that lead to a precipitous drop in the average speed of drivers.

108. I examined the hours-weighted average bitrate (measured in Mbps) for prime-time transmissions based on data Netflix made available to me. I used prime time because a disproportionate share of Netflix viewing takes place during prime-time hours and this period is most likely to be affected by congestion.⁸⁹

⁸⁹ As of July 2014, Netflix determines which hours constitute prime time separately for each combination of DMA, ISP, and date, defining prime time to be the three hours with the highest viewership. Prior to July 2014, prime time was determined separately for each DMA

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The hours-weighted average takes into account the speeds actually experienced by subscribers while they are watching. This measure may overstate speeds for systems with substantial congestion, as subscribers with the worst experiences may limit their viewing or stop altogether. Nevertheless, this measure provides an indicator of the overall performance of an ISP.

109. I compared Comcast to two other large cable systems that did not undertake attempts to degrade quality during this period, Cablevision and Charter. Netflix reaches Cablevision subscribers by providing Cablevision with Netflix's Open Connect appliances, which are caches of Netflix's content that are installed inside Cablevision's network. Netflix reaches Charter through transit providers. The fact that Netflix subscribers on Comcast received significantly worse performance than either of these two systems indicates that, absent the deliberate creation of scarce ports, we would not expect to see the congestion that took place on Comcast, regardless of whether Open Connect appliances or transit providers were used.

110. []

and ISP, and was defined as the three hours with the highest viewership averaged across the month.

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111. [[

⁹⁰ Netflix ISP Speed Index. This data is publicly available on Netflix's website starting in October 2013. *See USA ISP Speed Index*, Netflix, available at <http://ispspeedindex.netflix.com/usa>. For prior periods, Netflix has publicly reported only the overall average bitrates, which include both prime-time and non-prime-time streaming. For this report, Netflix provided me with a consistent series of the prime-time average bitrates going back to January 2012.

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112. The Netflix experience demonstrates that Comcast has the technical ability to foreclose OVDs from accessing its subscribers and to prevent its subscribers from accessing OVDs. It degraded the video streams that its subscribers were able to obtain from Netflix for a period of approximately 13 months with increasing intensity. This ultimately resulted in the quality of the Netflix signal

to some customers deteriorating to the point where the service became unusable.⁹¹

113. Time Warner Cable is able to foreclose OVDs, but to a lesser extent than Comcast. Because Time Warner Cable relies more than Comcast on transit providers to reach the rest of the Internet, if it allows its transit paths to congest, that would have a greater impact on its subscribers than is the case for Comcast. After an acquisition by Comcast, however, it is my understanding that the combined company would have access to the peering relationships that Comcast currently has, so that the combined company would be significantly less dependent on transit providers than Time Warner Cable currently is to reach the current Time Warner Cable subscribers.⁹²

B. Comcast's Incentives to Foreclose OVDs

114. As part of its effort to "break zero," Comcast made the business decision to deviate from normal industry practice and not allocate ports to accommodate the traffic demanded by Comcast's ISP subscribers who wanted to stream video from Netflix. Not allocating ports could, in a competitive market for broadband, have imposed costs on Comcast. It could have harmed Comcast's reputation with its subscribers and induced enough subscribers to switch ISPs to significantly reduce Comcast's future expected profits.

⁹¹ Florance Decl. ¶ 52.

⁹² Florance Decl. ¶ 63.

115. Comcast, however, as a profit maximizing company, presumably made the business decision that the present discounted value of benefits that it would receive as a result of degrading the quality of the Netflix video stream to Comcast subscribers⁹³ was greater than the present discounted value of the costs it incurred as a result of degrading the quality of the Netflix video stream to its subscribers. It presumably concluded that, on net, it was profitable to degrade the quality of the Netflix video stream that Netflix could send and its subscribers could receive. It is therefore evident that Comcast had an incentive to reduce the quality of video transmission that OVDs send to its subscribers to the point of effectively foreclosing completely OVD access to some of its subscribers, because, in fact, it did so.
116. There are a number of economic reasons why Comcast could have had incentives to foreclose OVDs from access to its subscribers. I describe those in further detail below. For now, I focus on its incentives to impose and raise terminating access fees for OVDs. The equilibrium price for accessing ISPs was zero for many years, as I noted above. ISPs did not charge content providers, CDNs, or transit providers for connecting to their networks. Comcast started undertaking efforts to break this “zero-price equilibrium” at least as early as 2009. With respect to Netflix, it appears that Comcast degraded quality, to the point of making it almost impossible for many of its subscribers to watch

⁹³ In principle, these benefits could include the avoided cost of allocating more ports for Comcast subscribers to stream Netflix; in practice, it is my understanding that Comcast likely incurred minimal costs since it could have reallocated ports or installed, at a relatively small cost, additional ports.

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Netflix, as part of a strategy to break the zero-price equilibrium with a major content provider.

117. Comcast and Dr. Israel claim that Comcast does not have an incentive to foreclose OVDs. They say that Comcast would not engage in such behavior because it would harm its own subscribers who would then switch to other alternative providers.⁹⁴ That is obviously not true since Comcast did in fact foreclose a significant OVD to secure bargaining leverage in its pricing negotiations. Comcast's incentives to foreclose OVDs are heightened by the fact that its subscribers are unlikely to switch to alternative broadband providers, as I showed above, and by the fact that its subscribers are likely to increase their viewing of Comcast video content if they cannot view content from OVDs.
118. Time Warner Cable can also realize benefits by foreclosing OVDs as part of a strategy, for example, to secure higher terminating access fees. As I noted above, Time Warner Cable is more reliant on transit providers than Comcast and therefore has less ability than Comcast to congest its transit paths without

⁹⁴ *Public Interest Statement* at 157 ("Therefore, any action that the combined firm might undertake to harm edge providers would degrade its broadband service and reduce the profits it could earn. For example, if Comcast were to impair its customers' access to popular content such as online video, it would quickly pay a steep price – both economically in terms of lost subscribers or reduced demand for broadband services, and in the court of public opinion." (internal citations omitted)); Israel Declaration, ¶ 36 ("Given the importance of high-quality edge provider services to broadband demand, any action that the combined firm might undertake to harm edge providers would degrade the value of its broadband service to consumers and thus potentially reduce the profits it could earn. Any strategy that reduces the availability or attractiveness of edge services would reduce demand for the combined firm's broadband services, potentially causing customers to switch to rival broadband providers or to reduce their overall consumption of broadband services, either of which would harm the combined firm's profits." (internal cross-references and citations omitted)).

degrading Internet access for its subscribers. If Time Warner Cable became part of Comcast it would have access to Comcast's many connections to the Internet. Post-Transaction it would therefore not lose access to significant Internet content by limiting particular transit providers that carry an OVD. Since Time Warner Cable's costs of foreclosing an OVD would be lower post-Transaction, its incentives to do so would be higher.

C. The Economics of the OVD Business

119. The OVD business is a nascent industry. A number of companies provided streaming video content in the 2000s. However, these companies primarily targeted consumers—often young ones—who were willing to watch online video on their computers. Several companies including Netflix started streaming long-form video content in the late 2000s. They were targeting mainstream American households that wanted to watch video on their television sets. This method of distribution started becoming available in the late 2000s as more households had television sets or set-top boxes that, with increasingly fast Internet connections, could provide a quality video stream on those television sets. By 2010, 24 percent of American households had at least one television set connected to the Internet. By 2014, that had increased to 49 percent.⁹⁵

⁹⁵ Leichtman Research Group, *49% of U.S. Households Have a TV Connected to the Internet*, June 6, 2014, *available at* <http://www.leichtmanresearch.com/press/060614release.html>.

120. The OVD industry has attracted a number of entrants. The early ones were Amazon, Hulu, Netflix and YouTube.⁹⁶ The rapid increase in broadband speeds and Internet-ready television sets together with the success of the early entrants has attracted more entrants such as Blockbuster, Crackle, and Veoh. Many OVDs with different backgrounds and approaches provide streaming video content today. These include traditional broadcast networks such as ABC and CBS, paid content networks such as A&E and Lifetime, sports leagues such as Major League Baseball and the National Basketball Association, movie services such as Crackle and Vudu, and many other OVDs.⁹⁷ A variety of firms are considering entry strategies. Apple offers video content on its iTunes store, sells

⁹⁶ YouTube has historically specialized in short videos, although it has recently moved towards having more long-form content. Janko Roettgers, *More Than a Third of All YouTube Viewing Comes from Long-Form Content*, Gigaom (Nov. 12, 2013), available at <http://gigaom.com/2013/11/12/more-than-a-third-of-all-youtube-viewing-comes-from-longform-content/>. Amazon shifted to a subscription model in 2011. *Amazon Prime Members Now Get Unlimited, Commercial-free, Instant Streaming of More Than 5,000 Movies and TV Shows at No Additional Cost*, Amazon (Feb. 22, 2011), available at <http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-newsArticle&ID=1531234&highlight>.

⁹⁷ The FCC has classified OVDs based on their vertical structure: programmers and content producers/owners such as ABC, NBC, CBS, Hulu, Crackle, MLB, NHL, and MLS; affiliates of online services such as Yahoo! and Facebook; affiliates of other business such as Netflix, Amazon, Apple, Google, Microsoft, Wal-Mart, and Best Buy; MVPD-affiliated OVDs such as DIRECTV, DISH, and Redbox Instant (a joint venture of Verizon and Coinstar); and OVD aggregators such as Roku and Boxee. Annual Assessment of the Status of Competition in the Market for the Delivery of Video Programming, *Fifteenth Report*, 28 FCC Rcd. 10496, 10619-23 ¶¶ 223-242 (“*Fifteenth Video Competition Report*”). See also Roku, <http://www.roku.com/channels/#!/browse/movies-and-tv/by-popular> (last visited Aug. 25, 2014) and Apple, <https://www.apple.com/appletv/whats-on/> (last visited Aug. 25, 2014). Some of these OVDs that offer content channels through MVPDs may restrict certain content to subscribers of those services.

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the AppleTV streaming device, and is considering various options for providing a streaming video service.⁹⁸

121. In addition to these new entrants, established MVPDs have also entered the OVD business or are planning to do so. Comcast operates its StreamPix service, which is currently offered only to Comcast subscribers.⁹⁹ Dish offers its DishWorld service to U.S. customers interested in international television programming and sports.¹⁰⁰
122. OVDs and content providers typically enter into contracts that provide the OVD with the exclusive right to stream the content over some period of time on a national basis.¹⁰¹ If an agreement is exclusive, then the OVD is the only provider allowed to stream that content in that country during the course of the contract. OVDs compete with each other and with other distributors for the right to stream video. Amazon and HBO, for example, recently entered into a

⁹⁸ Shalini Ramachandran et al., “*Apple in Talks With Comcast About Streaming-TV Service—Companies Discuss Service That Would Try to Bypass Web Congestion*,” Wall Street Journal (March 23, 2014), available at <http://online.wsj.com/news/articles/SB10001424052702303949704579457554242014552>.

⁹⁹ Mario Aguilar, *Streampix: Comcast's Answer to Its Netflix Problem?* Gizmodo (Feb. 21, 2012), available at <http://gizmodo.com/5886977/streampix-comcasts-answer-to-its-netflix-problem>.

¹⁰⁰ See DishWorld, *About Us*, available at <http://www.dishworld.com/mission>.

¹⁰¹ Netflix described to investors how content licensing deals work: “In general, content is bid for and licensed on a country-by-country basis (in some instances, licensing occurs on a regional basis in Latin America). See Netflix Inc., *Top Investor Questions*, available at <http://ir.netflix.com/faq.cfm#Question31057>.

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contract that gave Amazon the exclusive right to distribute some HBO content on Amazon.¹⁰²

123. OVDs typically enter into contracts with content providers that involve the payment of some combination of fixed and variable fees. The OVD may pay the content provider a fixed fee for exclusive rights regardless of the number of households that view that content (perhaps up to some limit, after which there may be an additional charge). It may also pay a variable fee based on the number of households that subscribe and/or view the content. Or, it may pay a combination of fixed and variable fees. In part, these fee structures allocate risk between the OVD and the content provider.
124. The OVDs that have entered to date have followed one or more of three business models to make money from the content they provide. (1) They charge a periodic subscription fee for access to all of the content and earn revenue based on the number of subscribers. (2) They sell advertising and earn revenue based on the number of people who view that advertising. (3) They charge for viewing individual content and earn revenue based on the number of times content is viewed.
125. The economics of the OVD business implies that they must receive a “critical mass” or “minimum viable scale” to operate profitably.¹⁰³ An OVD must have

¹⁰² *Amazon and HBO Ink Exclusive Multi-Year Deal to bring Award-Winning HBO Programming to Prime Members*, Amazon, (Apr. 23, 2014), available at <http://phx.corporate-ir.net/phoenix.zhtml?c=176060&p=irol-newsArticle&ID=1921211&highlight>.

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access to enough content to attract repeat viewers. Someone who finishes one television series must be able to find other content to keep them interested in the OVD. An OVD, however, must expect enough viewers to make competitive bids for content.

126. The economics of the OVD business also implies that there is a “virtuous circle” between viewers and content. More content enables an OVD to obtain more viewers; more viewers enable an OVD to secure more content. Although these positive feedback effects may diminish with size, they tend to drive growth at least in the early years of an OVD. The reverse is true as well. A decline in viewers limits the ability to secure content. Less content results in fewer viewers.

127. OVD profits depend largely on the amount of viewing the content generates. Subscription revenue ultimately depends on whether an existing or potential subscriber believes the household will engage in enough viewing to justify the monthly subscription charge. The revenue for advertising is directly proportional to the amount of viewing by consumers. The revenue for pay-for-view is directly proportional to the number of people who purchase particular content, but that in turn depends on the amount of viewing the consumers do. The OVD may incur costs that depend on viewing as well. In particular, OVDs

¹⁰³ See, e.g., Carl Shapiro. *Exclusivity in Network Industries*, 7 GEO. MASON L. REV. 673 (1999); David S. Evans (2009), “How Catalysts Ignite: The Economics of Platform-Based Start-Ups,” in Annabelle Gawer (ed.), *Platforms, Markets and Innovation*, Edward Elgar Publishing, 99-130; and, David S. Evans and Richard Schmalensee, Failure to Launch: Critical Mass in Platforms Businesses, 9 Review of Network Economics 4 (2010).

that have entered into content contracts with variable fees will incur costs from additional viewing (depending on whether the fees vary with subscribers and/or views).

D. The Ability of ISPs to Harm OVDs

128. I now examine the extent to which ISPs could harm OVDs by foreclosing access to their subscribers. My analysis is based on empirical evidence that is available for Netflix. I would expect similar conclusions to apply to other OVDs, although OVDs are most vulnerable when they have long-term fixed price licenses for content.

1. The Role of Fixed Costs for Content

129. Netflix enters into contracts to license content for periods of 6 months to five years; most contracts are for several years.¹⁰⁴ It typically pays a fixed fee to license that content and does not pay variable fees based on the number of views or the number of subscribers. It depreciates the cost of these contracts on a straight-line basis to account for its experience that content becomes less valuable with age, in part, because most the subscribers who are interested in that content will have watched it.
130. Taking this depreciation into account, Netflix's fixed payments for content accounted for 68.1 percent of Netflix's streaming operating costs in 2013 and

¹⁰⁴ *10-K for Period Ending 12/31/2013*, Netflix 29, available at <http://files.shareholder.com/downloads/NFLX/3390381218x0xS1065280-14-6/1065280/filing.pdf>.

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74.2 percent in 2012. Table 5 shows the breakdown of streaming operating costs for 2012-2013.

Table 5: Operating Expenses for Netflix's Domestic and International Streaming Segments, 2012-2013

<i>Operating Expense (Streaming)</i>	<i>2012</i>	<i>2013</i>
Content Costs	74.2%	68.1%
Marketing Costs	22.3%	16.1%
Other Costs of Revenue	3.5%	15.8%

Sources: 10-K for Period Ending 12/31/2013, Netflix, available at <http://files.shareholder.com/downloads/NFLX/3390381218x0xS1065280-14-6/1065280/filing.pdf>; Netflix, Inc., 10-K for Period Ending 12/31/2012, Netflix, available at <http://files.shareholder.com/downloads/NFLX/3390381218x0xS1065280-13-8/1065280/filing.pdf>.

2. The Impact of Loss of Subscribers on Profits

131. In 2013, Netflix had an operating profit margin of 22.6 percent for its domestic streaming segment, based on revenue from 31.7 million paid domestic streaming subscribers.¹⁰⁵ {{

¹⁰⁵ 10-K for Period Ending 12/31/2013, Netflix, available at <http://files.shareholder.com/downloads/NFLX/3390381218x0xS1065280-14-6/1065280/filing.pdf>. Note that in Netflix's financial statements, technology and development costs are counted as an operating expense for the company as a whole, but are not counted as an operating expense for any of its operating segments. If technology and development costs were to be allocated to the operating segments, it would reduce the reported operating margin for the domestic streaming segment (as well as for the other operating segments – international streaming and domestic DVD).

}}

133. {{

}} Over time, Netflix would be able to mitigate these losses by reducing its future licensing of content as deals expire; however, as a result of positive feedback effects working in reverse, it would see further decreases in subscribers who would respond to having less content available.

¹⁰⁶ Following Netflix's financial reporting, in these counterfactuals, the overall operating margin includes costs for both technology and development and general and administrative, but the domestic streaming operating margin does not include the allocated amounts for these costs. The allocation of these costs is only used in these calculations for the purpose of determining how much these expenses decline when the number of domestic streaming subscribers falls.

{{ }}

134. {{

}} OVDs with variable fee structures would reduce some of their costs as revenue fell thereby reducing the amount of profit lost. I would expect, however, that these OVDs would either lose out on future content deals or have to make fixed-price guarantees since content providers would recognize that the fees they could expect would be smaller.

E. The Economic Relationship between ISP Size, Bargaining Leverage and, the Price for Terminating Access

135. I show that larger ISPs have more bargaining leverage and can therefore likely demand and receive higher prices for terminating access. I then report empirical evidence concerning the payments that Netflix has paid ISPs that confirms this conclusion.

1. Bargaining Leverage and ISP Size

136. Suppose that an ISP seeks payments from an OVD for access to the ISP's subscribers. The OVD will consider the economic impact on its business of failing to reach an agreement. It will know that the ISP can fully or partially foreclose access and thereby impose economic costs on the OVD. A failure to reach an agreement with an ISP that accounts for a very small portion of the OVD's customers would not have significant effects on the financial situation of the OVD. A failure to reach an agreement with an ISP that accounts for a very large portion of the OVD's customers could have a devastating effect on the financial situation of the OVD.

137. Most ISPs are not large enough to use their ability to foreclose access to their subscribers as bargaining leverage. There are more than 400 ISPs in the United States. I report the estimated share of subscribers for 14 of the largest wired ISPs. I report shares based on each ISP's share of broadband subscribers with plans with maximum advertised download speeds of at least 3 Mbps and upload

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speeds of at least 768 Kbps—the cutoff used by Dr. Israel.¹⁰⁷ On this basis, the top 14 ISPs accounted for roughly {{ }} of ISP subscribers in the United States in 2013. The smallest of these 14, Cincinnati Bell, accounted for {{ }} of wired broadband subscribers. Three medium-sized ISPs (Cox, Bright House Networks, and RCN) do not have their subscriber base separately reported in this data, but account for less than {{ }} of wire broadband subscribers

¹⁰⁷ Israel Declaration, ¶ 42. All calculations are based on the estimated number of wired broadband subscribers with maximum advertised speeds of at least 3 Mbps down and 768 Kbps up as of June 30, 2013. For Comcast and Time Warner Cable, the number of subscribers meeting these conditions is taken from the Form 477 data included in Letter from Francis M. Bruno, Counsel, Comcast, to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (June 27, 2014) (“*June 27 Letter*”) and Supplemental Data to June 27 Letter, MB Docket No. 14-57 (June 27, 2014). For the other ISPs, the data on the total number of subscribers is taken from Leichtman Research Group, *About 295,000 Add Broadband in the Second Quarter of 2013*, Aug. 20, 2013, available at <http://www.leichtmanresearch.com/press/082013release.html>. Note that this data source excludes three large ISPs (Cox, Bright House, and RCN) and many minor ISPs. It reports that Cox, Bright House, and RCN together account for less than 6.7 million subscribers. Other sources have estimated the Cox has about 4.6 million broadband subscribers, Bright House has about 2.4 million broadband subscribers, and RCN has about 300,000. See <http://blog.actiontec.com/broadband-numbers/>; Shalini Ramachandran, “Bright House to Build Ultrafast Broadband Network,” *Wall Street Journal* (March 12, 2014), available at <http://online.wsj.com/news/articles/SB10001424052702303546204579435592919358008>. For the ISPs other than Comcast and Time Warner Cable, I estimated the share of these subscribers that meet the speed threshold (3 Mbps down / 768 Kbps up). For the cable ISPs included in the table, I assumed that the percentage of subscribers meeting this threshold was the same as the weighted average for Comcast and Time Warner Cable. For all other ISPs, I assumed that the percentage of subscribers meeting this threshold was such that the overall average of the share of subscribers meeting this threshold, across all ISPs, was equal to the overall average reported by the FCC. See *2014 Internet Access Services Report*. The denominator for the shares is taken to be the number of broadband subscribers with maximum advertised speeds of at least 3 Mbps down / 768 Kbps up, as reported in that FCC report.

138. The more than 380 other ISPs each have shares below {{ }}. An OVD would therefore face minimal financial consequences if one of these small ISPs foreclosed access to its subscribers. None of these small ISPs can make a credible threat that it will impose serious harm on the OVD by foreclosing access to its subscribers.

A blank sheet of white graph paper featuring a light gray grid. The grid consists of small squares formed by thin gray lines. A prominent vertical line runs down the left side, approximately one-fifth of the way from the left edge, extending from the top margin to the bottom. A horizontal line runs across the middle of the page, intersecting the vertical line. This intersection divides the page into four quadrants. The top-left quadrant is further divided by a horizontal line near the top edge, creating a header area. The overall layout is clean and minimalist, typical of standard graph paper used for mathematics or design.

76

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fraction of Netflix's margin that each one of these cable systems could eliminate if it foreclosed Netflix from access to its subscribers. They range from {{
}} for CenturyLink to {{
}} for Comcast. The ability of these very large ISPs to threaten to impose harms on OVDs increases dramatically as they increase in size.

141. All else being equal, I would expect that ISPs with greater bargaining leverage, owing to their ability to foreclose an OVD from reaching a larger portion of wired broadband subscribers and thereby deny profits from those subscribers, would be able to demand and receive higher prices for reaching each of their subscribers. This result is based on my experience as an economist and familiarity with the relationship between the size of negotiating parties and the prices they negotiate for a number of businesses in several industries that I have analyzed, in a confidential capacity, over the years.¹⁰⁸ As I show next, this expectation is confirmed by the terminating network access fees that ISPs have demanded and received from Netflix.

¹⁰⁸ It is possible to identify some assumptions under which economic theory would show a different result as Dr. Israel has done. As I discuss in detail below, however, there is significant empirical evidence that is consistent with my conclusion and inconsistent with Dr. Israel's.

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2. Netflix Payments for Access to ISPs

142. It is my understanding, based on interviews with Netflix employees, including Ken Florance, my review of the declaration submitted by Mr. Florance in these proceedings, and my detailed analysis of Netflix's interconnection agreements with large ISPs, that {{

}} In particular:

- a. Excluding the largest four ISPS, ISPs have not been able to impose terminating access fees on Netflix. Smaller ISPs have been unable to demand and receive payment. They continue to adhere to the zero price equilibrium.
- b. Some of the largest ISPs began seeking compensation around 2010. In several cases these ISPs, like Comcast, made business and technical decisions that resulted in the ISP's subscribers experiencing significant reductions in the quality of streaming video from Netflix. These very large ISPs included AT&T and Verizon.

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143. Netflix began negotiating over terminating access fees with these large ISPs because of the impact that these large ISPs could have on Netflix's business. Netflix anticipated, based on its business experience, {{

}} In some cases, particularly for Comcast and Verizon, the degradation of quality became so severe that Netflix believed that an increasing number of its customers who used those ISPs would not be able to watch Netflix videos at all at least during prime time.

144. In February 2014, Netflix entered into an agreement with Comcast concerning allocating port capacity and making other business and technical arrangements that would ensure that Comcast subscribers would receive sufficiently high quality video streams.

145. Other very large ISPs also engaged in a similar bargaining strategy. My understanding is that some of those ISPs, like Comcast, allowed congestion to degrade the speed of Netflix traffic for their broadband subscribers. They also sought payment for uncongested access to their respective networks. After reaching the agreement with Comcast, Netflix entered into subsequent agreements with the other extremely large wired broadband ISPs: Verizon, AT&T and Time Warner Cable.

146. Based on these agreements, {{

}}

147. {{ }} The other issue involves the extent to which an ISP can degrade Netflix's traffic without degrading significantly access to other Internet content that its subscribers need. My understanding is that AT&T, CenturyLink, Comcast, and Verizon have peering relationships that enable them to degrade Netflix traffic without substantially degrading other traffic to and from the broader Internet. For these ISPs, the cost of degradation is relatively low. CenturyLink therefore, has substantially more bargaining leverage than does Charter, even though they have roughly similar numbers of subscribers.
148. These results confirm that among the largest ISPs, {{ }} I would therefore expect that, post-Transaction, Comcast would be able to demand and receive higher terminating access fees from OVDs than it would be able to demand and receive absent the consolidation with Time Warn Warner.

F. The Economic Analysis of Public Harms from the Transaction

149. I now summarize the key findings, each of which is based on significant empirical evidence, I have reached to this point:
- a. Comcast and Time Warner Cable each have essentially monopoly bottlenecks for the provision of wired broadband to their subscribers, given that consumers have limited alternatives to these cable broadband

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providers and the cost of switching to an alternative provider, if available, is very high.

- b. Comcast has the ability to partially or fully foreclose access by an OVD to its subscribers as a result of its extensive connections to the Internet. Comcast could make these connections available to Time Warner Cable.
- c. Comcast has the ability to impose significant harm on an OVD as a result of partial or full foreclosure. The merged firm would have greater ability both because of its increased size and because of its ability to congest transit paths at relatively low cost to itself.
- d. The merged firm would have significantly more bargaining power over OVDs than Comcast or Time Warner Cable have individually.
- e. Comcast does not risk losing meaningful profits as a result of subscribers switching to other ISPs when Comcast degrades the quality of an OVDs streaming service to its subscribers.

150. These findings contradict the underpinnings of the analysis that Comcast's economist, Dr. Israel, has presented in support of the proposition that the Transaction could not reduce competition and thereby cause public harm. Therefore, I recommend that the FCC reject their findings that the Transaction could not result in public harm. Comcast and Dr. Israel have provided no credible economic or empirical evidence to support that conclusion.

151. In the remainder of my declaration, I describe two plausible scenarios under which the Transaction could reduce competition and thereby cause public harm. Both scenarios are consistent with the empirical findings that I have reported above.

1. Raising Terminating Access Prices

152. The Transaction would likely result in a unilateral price increase resulting entirely from the increased market power that Comcast would have as a result of

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the Transaction. Comcast would likely use its increased bargaining leverage to demand and receive higher terminating access fees from OVDs than the fees it would demand and receive in the absence of the Transaction. Based on figures for June 2013, Comcast controls wired broadband access to approximately {{ }} households accounting for {{ }} of all households with wired broadband. If Comcast also owned Time Warner Cable (and accounting for the divestiture) it would control wired broadband access to approximately {{ }} households, accounting for 35.5 percent of all households with wired broadband access. As a result, the number and share of households for which it would control wired broadband access would increase by about {{ }}.¹⁰⁹

153. These estimates likely understate the likely effect of the Transaction on Comcast's terminating access fees. I showed earlier that consumers are moving

¹⁰⁹ I follow the methodology used by Comcast and Dr. Israel. Israel Declaration, ¶ 42; June 27 Letter; Supplemental Data. All calculations are based on the estimated number of wired broadband subscribers with maximum advertised speeds of at least 3 Mbps down and 768 Kbps up as of June 30, 2013. The number of pre-merger subscribers meeting these speed thresholds is taken from the Form 477 data included in the Supplemental Data. The post-merger shares need to account for the divestitures. To do so, I scale the number of Time Warner Cable divestitures down by the ratio of Time Warner Cable subscribers meeting the speed thresholds in the states where the divestitures occur. Next, I scale the number of Comcast divestitures down by the ratio of Comcast subscribers meeting the speed thresholds, and I scale the number of Charter subscribers received by Comcast down by the ratio of Charter subscribers meeting the speed threshold in the states reported in the Supplemental Data. Note that I have followed Comcast and Dr. Israel in using the number of video subscribers transferred in the divestiture transactions as if it were the number of broadband subscribers to be transferred. It may be more appropriate to use the number of broadband subscribers being transferred, in which case the post-divestiture market share of the combined firm would be slightly larger. The denominator for the shares is taken to be the number of broadband subscribers with maximum advertised speeds of at least 3 Mbps down / 768 Kbps up. See *2014 Internet Access Services Report*.

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rapidly away from DSL to cable and fiber. DSL is therefore becoming a less relevant alternative for consumers that want to use many of the broadband-intensive features including video chat, online video, and games. Comcast and Time Warner Cable would account for {{ }} percent of broadband subscribers, exclusive of DSL other than U-Verse, post-Transaction after accounting for divestitures. That is an increase from {{ }} percent as of June 30, 2013.¹¹⁰

154. {{

}} I would therefore expect that Comcast would be able to demand and receive higher prices given the Transaction than it would be able to demand and receive without the Transaction. The higher prices of course would apply for access to Comcast subscribers in Comcast's current local markets, but also to Comcast subscribers in Time Warner Cable's current local markets. As part of Comcast, the terminating access fee for Time Warner Cable would

¹¹⁰ The number of subscribers for Comcast and Time Warner and the net number of subscribers to be divested is taken from the the data included in Letter from Francis M. Bruno, Comcast, to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (June 27, 2014) ("June 27 Letter") and Supplemental Data to June 27 Letter, MB Docket No. 14-57 (June 27, 2014). For the total number of broadband subscribers, I start from the number of non-wireless, non-DSL connections reported by the FCC. Federal Communications Commission (2014), "Internet Access Services: Status as of June 30, 2013," available at https://apps.fcc.gov/edocs_public/attachmatch/DOC-327829A1.pdf. Since this number excludes non-FTTP U-Verse subscribers, I add the total number of U-Verse subscribers reported by AT&T in its quarterly report. AT&T Inc., "10-Q for the Period Ending June 30, 2013," available at http://phx.corporate-ir.net/phoenix.zhtml?c=113088&p=irol-sec&control_selectgroup=Quarterly%20Filings. This is conservative, since it double counts the FTTP U-Verse subscribers.

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increase to the level charged by Comcast, and the level charged by Comcast would increase as a result of its increased bargaining power.

155. Comcast has engaged in a strategy of brinksmanship with Netflix and other transit providers and CDNs that Netflix has relied on to break the zero-equilibrium price for access to its subscribers. That effort has been very controversial because it has gone against long-standing industry practice. Now that Comcast has broken that equilibrium, and set a precedent of charging OVDs, CDNs, and transit providers for access to its subscribers, Comcast can fully exploit its ability to foreclose OVDs from access to its subscribers and secure a significant portion of the incremental profits that OVDs earn from those subscribers.
156. Comcast, like other ISPs, is a two-sided platform that connects providers of online videos and consumers of online videos. The total price that this platform charges for a connection between providers and consumers equals the sum of the prices it charges both sides. I have already concluded that if the Transaction were approved, the merged entity would likely be able to raise prices significantly to OVDs. It is possible that Comcast could pass through some of the revenue received from OVDs in the form of lower prices to its subscribers some of whom consume online videos. Given the significant market power that Comcast has over its subscribers, it is unlikely that it would pass on enough of

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that revenue to offset the price increase to OVDs¹¹¹ Therefore, it is likely that Comcast would raise the total price of connection significantly if the Transaction were approved. Again, the total price for Time Warner Cable would increase to the Comcast level once it is part of Comcast, and the Comcast level would increase as a result of its increased bargaining power.

2. Bargaining Model Relied on by Dr. Israel

157. Comcast's economist, Dr. Israel, claims, contrary to the conclusion I have just reached, that the Transaction would not increase Comcast's bargaining power, and therefore there is no concern that Comcast would increase prices to OVDs.¹¹² I show that his analysis is not supported by evidence, theory, or common experience.
158. Dr. Israel relies on a simple theoretical model of bargaining to argue that if the per-user profit for an OVD increases with the number of subscribers, a merger of ISPs would actually improve the bargaining position of an OVD with respect

¹¹¹ Firms that are not operating in highly competitive markets typically do not pass on anything close to 100 percent of cost reductions. *See*, survey of the empirical pass-through literature in David S. Evans and Abel Mateus (2011), "How Changes in Payment Card Interchange Fees Affect Consumers Fees and Merchant Prices: An Economic Analysis with Applications to the European Union," Working Paper, *available at* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1878735. In testimony before the House Judiciary Committee, Comcast Executive Vice President David Cohen was asked "What can be done to help lower prices?" Mr. Cohen said he did not have an answer for that question and offered only that the deal "has the potential to slow the increase in prices." *See*, Amy Schatz, *Lawmakers to Comcast and Time Warner: Your Cable Deal Helps Consumers How?* re/code (May 8, 2014), *available at* <http://recode.net/2014/05/08/lawmakers-ask-how-comcast-time-warner-cable-deal-helps-consumers/>. Note that even if Comcast did pass on any of the revenue gains from OVDs to consumers, the consumers may face additional charges from the OVDs as a result of their higher costs.

¹¹² Israel Declaration ¶¶ 89-105.

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to access to subscribers of the merged entity, not worsen it. Before I go into the details of the model of bargaining that Dr. Israel references, it is important to note two fundamental flaws in his analysis.

159. First, Dr. Israel's position is fundamentally at odds with the fact that larger firms generally receive better pricing terms.¹¹³ Most importantly, facts concerning OVD payments to ISPs are not consistent with his model. As I discussed above, the evidence here is that small ISPs receive no payments from OVDs while larger ISPs receive significant payments. Facts trump theory.
160. Second, the economic model that Dr. Israel considers does not, in fact, attempt to address how bargaining power changes with firm size, despite Dr. Israel's assertion to the contrary. Dr. Israel claims that the literature he relies on "demonstrates that mergers between firms that are not horizontal competitors with each other will increase the parties' bargaining power only under specific,

¹¹³ Tasneem Chipty and Christopher M. Snyder, *The Role of Firm Size in Bilateral Bargaining: A Study of the Cable Television Industry*, 81 *The Review of Economics and Statistics*, 326, 326 (1999) ("The Cable Television's industry's trade press often claims that large, horizontally integrated cable operators, some involving hundreds of local systems, are able to bargain for lower prices in their negotiations with suppliers of program services. This claim is not unique to cable; for many industries, the received wisdom in the business press is that buyer size confers a bargaining advantage." (internal citations omitted)). *See also*, F.M. Scherer and David Ross, *Industrial Market Structure and Economic Performance*, Boston: Houghton Mifflin, at 533-535 (1990); Ute Schumacher (1991), *Buyer Structure and Seller Performance in U.S. Manufacturing Industries*, 73 *Review of Economics and Statistics* 277, 277-284; Yungsan Kim, *Big Customers, Selling Expenses, and Profit Margin*, 1 *Journal of Economic Research* 311, 311-326 (1996); Rajeev K. Tyagi (2001), *Why Do Suppliers Charge Larger Buyers Lower Prices?* 49 *Journal of Industrial Economics* 45, 45 ("The popular press and many academic studies point out the phenomenon of upstream suppliers charging their larger downstream buyer firms, relative to smaller downstream buying firms, lower prices.").

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restrictive assumptions and that the effects may well go the other way.”¹¹⁴ As I discuss further below, the literature he relies on *assumes* that the buyer and seller split the gains from trade evenly, 50/50, regardless of the size or strategic position of the buyer or seller.¹¹⁵ The split that a buyer or seller gets is the measure of bargaining power from the standpoint of economics—a higher split corresponds to more bargaining power. Therefore, the economic models do not consider at all whether larger firms may have more bargaining power. The model assumes an invariant 50/50 split and considers only the extent to which the gains from trade may vary by firm size.

161. Dr. Israel relies primarily on a paper published in 1999 by Chipty and Snyder in which the authors develop a simple theoretical model of negotiations and apply this model to negotiations between MVPDs and program providers.¹¹⁶ They consider the situation in which two types of firms enter into a negotiation over something of value that they create as a result of engaging in exchange. Through the negotiation, they will decide how to split the value between them. Suppose the size of a firm is measured by the quantity that it buys or sells. The

¹¹⁴ Israel Declaration ¶ 101.

¹¹⁵ As I discuss further below, Dr. Israel does reference a paper by Adilov and Alexander in which they make the point that the other papers relied on by Dr. Israel fail to consider changes in bargaining power. Dr. Israel’s only response to this is to argue that the illustrative reasons provided by Adilov and Alexander for why bargaining power may vary depending on firm size are not relevant in this case. I discuss below why Dr. Israel’s claim is wrong.

¹¹⁶ Israel Declaration ¶ 101 (citing Tasneem Chipty and Christopher M. Snyder, *The Role of Firm Size in Bilateral Bargaining: A Study of the Cable Television Industry*, 81 Review of Economics and Statistics 326, 326-340 (1999)).

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authors consider the impact on an increase in size of one of the firms on the share of the value they get.

162. The Chipty-Snyder model assumes that each party negotiates as if it is the marginal party with which the other side is negotiating and that it receives one half of the surplus that results from an agreement, with the counter-party receiving the other half.¹¹⁷ Again, this assumption is that the bargaining power is invariant to firm size and is purely an assumption of the model rather than something that the model is used to prove. Under these assumptions, the Chipty and Snyder model shows that if one of the firms in the negotiation becomes larger it will get a larger payment if the value they have to split increases at a diminishing rate with the size of that firm.¹¹⁸ (In this case the function that relates value and size is “concave.”) That result accords with intuition and experience—bigger firms do better in negotiations.
163. Their model shows, however, that if a firm becomes larger, it will get a smaller payment if the value the parties have to split increases at an increasing rate with the size of that firm.¹¹⁹ (In this case the function that relates value and size is “convex.”) That result, of course, is surprising since it says that smaller firms do better in negotiations.

¹¹⁷ For simplicity and because Dr. Israel focuses on the division of the seller’s profit, I assume that there is no profit directly generated by the buyer as a result of the agreement between the parties.

¹¹⁸ Alternatively, if the direction of payment flows from the firm that is getting larger, then the payment it makes will be smaller. In any event, it will be advantaged.

¹¹⁹ Alternatively, if the direction of payment flows from the firm that is getting larger, then the payment it makes will be larger. In any event, it will be disadvantaged.

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164. Dr. Israel applies this analysis to the relationship between ISP size and access prices to OVDs. To explain how the Chitty-Snyder model applies in this context, consider a simple example. Suppose the profit to the OVD from the last subscriber is \$10, the profit from the second-to-last subscriber is \$9, and the profit from the third-to-last subscriber is \$8. An ISP with only one subscriber would generate a per-subscriber profit of \$10 for the OVD as a result of reaching an agreement and assuming that that buyer is the marginal (last) agreement reached. The ISP would receive half of that \$10 profit, or \$5, per subscriber. An ISP with two subscribers would generate a per-subscriber profit of \$9.50 (average of \$10 and \$9) for the OVD as a result of reaching an agreement and assuming that that ISP is the marginal (last) agreement reached. The ISP would receive half of that \$9.50 profit, or \$4.75, per subscriber. Similarly, an ISP with three subscribers would generate a per-subscriber profit of \$9 (average of \$10, \$9 and \$8) for the OVD as a result of reaching an agreement and assuming that that ISP is the marginal (last) agreement reached. The ISP would receive half of that \$9 profit, or \$4.50, per subscriber. Thus, the smallest ISP in this example receives \$5 per subscriber, while the largest receives \$4.50 per subscriber.
165. Dr. Israel argues that there is no reason to believe that the profit per subscriber decreases in the number of subscribers. If profit per subscriber increased with the number of subscribers—the convex case—his analysis would imply that smaller ISPs would be able to charge OVDs higher prices, as in the above example. Profit per subscriber could increase with the number of subscribers,

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for example, if there were scale economies in OVD costs. If profit per subscriber was constant, regardless of the number of subscribers—the linear case which is the dividing line between convex and concave—his analysis would imply that ISPs would charge OVDs the same price regardless of ISP size. Dr. Israel concludes from this analysis that there is no reason to believe that the merged Comcast-Time Warner Cable entity would have greater bargaining power over OVDs.¹²⁰ The conclusion that smaller ISPs could charge higher prices in the presence of scale economies is counterintuitive and inconsistent with common experience that larger firms can demand better deals for themselves.

166. Not surprisingly, his conclusion, for which he offers no empirical support, is wrong as a matter of fact. As we have seen, most ISPs, covering a wide size range, charge zero. Only very large ISPs charge positive fees. {{
}}
167. It is useful to understand how the Chitty-Snyder model leads to a theoretical result that is so implausible. Most critically, as I have noted, the model assumes that the bargaining position of all sellers is the same with respect to all buyers. It assumes that all sellers and buyers will split profits 50/50 regardless of the size of the seller or buyer. That is, the split that a buyer receives—that is, its bargaining power—is assumed to be invariant with the size of the buyer. (To be consistent with Dr. Israel's discussion, I adopt the convention he uses that the

¹²⁰ Israel Declaration ¶ 102.

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ISPs are “buyers” and the OVDs are “sellers,” even though the payment flows from the OVDs to the ISPs.) The model therefore assumes that Comcast, with 20.6 million subscribers would receive the same 50/50 split as Cincinnati Bell, which has only 268,400 subscribers, and the same 50/50 split as an extremely small ISP that might have only 30,000 subscribers.¹²¹ Given that the Chipty-Snyder model does not address how bargaining power varies by size of seller (ISP) and is inconsistent with the empirical evidence, it is not relevant for analyzing the effects of the proposed Transaction.

168. In later work, Adilov and Alexander (2006) address the failure of Chipty and Snyder (1999) to allow for differences in bargaining position across firms and, in particular, for changes in bargaining position post merger.¹²² They find that:

¹²¹ The only factor determining whether a buyer receives better or worse pricing in the Chipty-Snyder model is whether its contribution to the seller’s profits are higher or lower on a per-subscriber basis, when viewed as the marginal buyer. It is also likely that the marginal buyer assumption is not satisfied in real-world negotiations. This assumption says that with, for example, a seller with significant scale economies such that the marginal subscriber is significantly more profitable than initial subscribers, a tiny buyer would be able to go to the seller and negotiate based on the profitability of that marginal subscriber and would be able to obtain better terms than a much larger buyer.

¹²² Nodir Adilov and Peter J. Alexander, *Horizontal Merger: Pivotal Buyers and Bargaining Power*, 91 *Economics Letters* 307, 307-311 (2006). Subsequent work after Adilov and Alexander (2006) provide further reasons to believe that the assumption in Chipty and Snyder (1999) that bargaining power does not vary across buyers is flawed. Caprice (2007) finds that even if sellers’ cost functions are concave, larger firms can receive better pricing if their size puts them in a sufficiently better position if they fail to reach an agreement with one of the sellers and seek to renegotiate with the other sellers. Stéphane Caprice (2007), *Upstream Competition and Buyer Mergers*, Working Paper, available at <https://www.diw.de/sixcms/detail.php/86150>. Smith and Thanassoulis find that even when sellers’ profit functions are concave, if there is sufficient uncertainty in whether deals among buyers and sellers are reached, the largest buyer will receive the most favorable pricing because the scale it is providing—which becomes certain if a deal is reached—becomes more valuable under uncertainty. See Howard Smith and John Thanassoulis (2012), *Upstream*

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Chipty and Snyder (1999) assume that bargaining power will be unaffected by merger and argue that the shape of supplier's gross surplus function provides sufficient guidance for regulatory purposes....We show that if there are asymmetries in bargaining power, these results may not hold. On the contrary, the newly merged pivotal firm may find its bargaining position significantly enhanced by merger. This result may be of interest to antitrust and regulatory agencies, in particular the Justice Department and the Federal Communications Commission.¹²³

169. Dr. Israel references the Adilov-Alexander model, although not the conclusions cited above. He attempts to argue that the reasons they give why the merged entity may have greater bargaining power do not apply in this case. I note that the reasons in question were only examples of factors that Adilov and Alexander believed might allow a merged firm to have greater bargaining power, rather than an exhaustive list of factors. The factors, as cited by Dr. Israel, were the following: “(i) the merger may give the buyers more information about prices and other contractual terms; (ii) the merger may result in retaining a more skilled bargaining team (e.g., the best negotiators from each merging party); and

Uncertainty and Countervailing Power, 30 International Journal of Industrial Organization 483, 487 (2012).

¹²³ Adilov and Alexander (2006), at p. 311. Adilov and Alexander (2006) also address a “pivotal buyer” model of bargaining. Dr. Israel references this model in his declaration: “Raskovich (2003) extended the model of Chipty and Snyder (1999) to show that if a merger leads a buyer to become “pivotal”—i.e., sufficiently large to impact the production decision of the seller—it is actually disadvantaged in its negotiations relative to a non-pivotal buyer because it internalizes some of the seller’s costs.” See Israel Declaration, ¶ 101, referencing Alexander Raskovich (2003), “Pivotal Buyers and Bargaining Position,” *The Journal of Industrial Economics*, LI(4): 405-426. Dr. Israel notes that he does not believe that the merged entity would be pivotal to any negotiating partner. And while I noted above that not having access to the merged entity’s subscribers would have an extremely large effect on Netflix’s profitability, I am not saying that Netflix would not be able to operate at all if it could not come to terms with the merged entity. In any event, Adilov and Alexander (2006) also consider the Raskovich (2003) model and reach the same conclusions as with respect to Chipty and Snyder (1999), in that the model fails to capture changes in bargaining position as a result of the merger.

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(iii) firm size and outside options may be positively correlated (larger firms may have a better fallback position irrespective of whether they are “buyers” or “sellers”).”¹²⁴

170. Dr. Israel dismisses each of these without factual support. As to the first two reasons, while I do not have access to the internal data and documents of the merging parties, I note that if Comcast and Time Warner Cable negotiated significantly different terms and if those differences resulted from asymmetries between the parties in the informational and bargaining skill advantages noted in the first two factors, that is something I would expect would be easily and directly remedied post-merger.

171. Dr. Israel also dismisses the third factor, arguing that “with or without the merger, the content provided by edge providers is important to consumers (and thus to the demand for an ISP’s broadband business), and the loss of such content (due to failure to reach a deal with an edge provider or a CDN or transit provider) would be harmful to the end users who can no longer access that content and thus to the ISP’s broadband business. There is no basis to conclude that bringing together two ISPs with distinct footprints lessens the harm from loss of that content for any particular end user in a given area.”¹²⁵

¹²⁴ Israel Declaration ¶ 101.

¹²⁵ Israel Declaration ¶ 102. He also argues, with no factual support, that “[i]n fact, to the extent that edge providers are offering content that is attractive to consumers, the harm from degrading that content may increase with the size of the buyer as a large ISP may have more reputational assets to protect. For example, problems anywhere in the network (e.g., a

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172. Dr. Israel does not consider the fact that larger ISPs may be more likely to have greater bargaining power because they are more likely to vertically integrate and have better options in the absence of being able to reach an agreement. In the case of Comcast, it is an owner of content and benefits to the extent that decreased use of OVDs leads to greater consumption of its content. Comcast has also made greater investments than other ISPs in streaming video. Absent a merger, Time Warner Cable does not experience the same benefits as Comcast. After the merger, the combined entity would benefit from these factors with respect to the former Time Warner Cable subscribers.
173. In his attempted dismissal of Adilov and Alexander, Dr. Israel also ignores their finding that “[u]ltimately, the relationship between firm size and bargaining power is empirical, which implies a need for careful case-by-case studies of merger applications.”¹²⁶ {{ Dr. Israel points only to what he notes as a “limited” empirical literature, citing a finding in Chitty and Snyder that “empirical analysis of a related industry (bargaining between MVPDS and content providers) indicates that bargaining effects can, go the other way, with a merger leading to reduced bargaining power.”¹²⁷ In particular, he quotes Chitty

particular congested link) might harm Comcast’s reputation everywhere—meaning that a larger ISP may have a stronger incentive to protect quality throughout the entire network).”

¹²⁶ Adilov and Alexander (2006), p.310.

¹²⁷ Israel Declaration ¶ 104.

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and Snyder as finding that “large buyers do not benefit from positive bargaining effects in the cable television industry.”¹²⁸

174. The empirical analysis conducted by Chipty and Snyder was not of rates paid by cable companies to content providers. Rather, it was an attempt to estimate the profit function of content providers. Chipty and Snyder concluded that the profit function was convex, so that (giving the full quote, rather than the excerpt selected by Dr. Israel):

The result emerging consistently from the alternative methodologies is that the surplus function of program-service suppliers is convex. Under the maintained assumptions of the theoretical model, this result implies that large buyers do not benefit from positive bargaining effects in the cable television industry.¹²⁹

175. That is, Chipty and Snyder did not undertake an empirical analysis that validated the results of the model (which ignored differences in bargaining power across buyers). Rather, they undertook an empirical analysis of sellers’ profit functions, which under the assumptions of their model was determinative as to the prices that buyers paid. They then noted that if the assumptions of their theoretical model were correct, that would imply that larger buyers do not receive better terms from content providers. Their analysis provides no empirical support for their model or for Dr. Israel’s reliance on it.

¹²⁸ Israel Declaration ¶ 104, n.134 (citing Chipty and Snyder at 326).

¹²⁹ *Chipty and Snyder* at 326.

3. Comcast Strategies to Suppress Competition With MVPD Services

176. The expansion of OVDs provides consumers with alternatives to video programming typically provided by MVPDs. Some people, including particularly younger ones, who are not that interested in MVPD programming, can “cut the cord” and rely mainly on OVDs and other sources of content. Presently, the number of people who are cutting the cord is relatively small. The number is likely to increase as the number and offerings of OVDs expand, as more programming providers offer programming “over the top,” and as the population ages.¹³⁰ This loss of video programming subscribers puts Comcast’s MVPD business at risk. Although there could be offsetting factors, Comcast has an incentive to protect that business and the associated profits.¹³¹
177. The Transaction would significantly increase Comcast’s ability to suppress the development of a robust OVD industry to protect its MVPD profits. Comcast could increase terminating access fees to OVDs as part of a raising rivals cost strategy to reduce the supply of competing video programming. Comcast could also disrupt OVDs through congestion strategies as it deployed against Netflix to raise their costs of competing. It could also foreclose OVDs completely from

¹³⁰ As reported by Bloomberg, 21st Century Fox President Chase Carey stated that cord nevers are a “legitimate concern,” and that “[i]t remains to be seen what happens as this generation ages, but, what is clear is that this is an issue that will play out over the next 10-plus years, not the next three.” Ian King, *How ‘Cord Never’ Generation Poses Sales Drag for Pay TV*, Bloomberg (Sept. 18, 2013), available at <http://www.bloomberg.com/news/2013-09-18/how-cord-never-generation-poses-sales-drag-for-pay-tv.html>.

¹³¹ MPVD and broadband services are not consumed in fixed proportion and as a result the Chicago single-monopoly profit theorem does not necessarily hold

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securing access to its subscribers and thereby prevent them from achieving or maintaining critical mass.

178. By engaging in raising rivals cost or foreclosure strategies to retard the development of OVDs Comcast would buy itself some time. While suppressing the development of competing OVDs, it could use its considerable assets to expand its own OVD business and thereby provide its subscribers with its own OVD alternative.
179. The development of a robust supply of OVD offerings could help solve a chicken-and-egg problem that deters long-run broadband entry. Despite the very high barriers to entry, over the *long-term*, which I take as 10-20 years, Comcast could face significant potential threats to its substantial market power as a provider of wired broadband and video programming as a result of changes that could make entry more attractive and feasible. If Comcast's current video subscribers become increasingly comfortable dropping cable in favor of some combination of OVD offerings, demand for standalone broadband would increase such that it could make entry in that market more attractive in the long run. That would place all of Comcast's profits associated with its substantial market power as an integrated ISP and MVPD in jeopardy.¹³² Even if the

¹³² In addition to offering high quality programming, an OVD would also likely need to offer a broad array of programming to be a successful competitor to current MVPD offerings. *See, e.g.,* John Martin, CFO Time Warner, noted at a Morgan Stanley investor conference in November 2013, when asked about Comcast's offer of a cable bundle that included a limited number of channels, HBO, and broadband: "[T]here may be somewhat limited demand for a product like that because I don't think there is a tremendous amount that demonstrated example where U.S. households want a smaller video package I mean they could get that

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development of a robust OVD industry resulted in a small incremental risk of high-speed broadband into Comcast's footprint in the next decade or two, Comcast would have an additional incentive to suppress the development of that industry since OVD competition plus high-speed broadband competition could eliminate much of its profits.

180. Comcast's strategies to suppress OVD competition would complement similar strategies that other very large ISPs also have the ability and incentive to engage in. As I noted above, after the Transaction, just three ISPs—Comcast (including Time Warner Cable and accounting for proposed divestitures), AT&T, and Verizon—would account for {{ }} of wired broadband subscribers at the end of 2013.¹³³ Their combined efforts could prevent some OVDs from becoming viable because of the lack of national scale and help protect the incumbent very large MVPD/ISPs from OVD competition.
181. The Transaction would enhance these effects significantly by increasing substantially the bargaining leverage that Comcast would have and its ability to foreclose OVDs from a significant portion of American households. This effect

today a lot of the distributors offer low end packages and they're not terribly successful and that's a reason why we estimate the average revenue per household for in the U.S. is about \$80 I mean you could probably pay \$20, \$30 but this is not that attractive because culturally Americans just watch a tremendous amount of television." Time Warner Management Presents at Morgan Stanley 2013 Technology Media & Telecom Conference, transcript, Nov. 21, 2013, *available at* <http://seekingalpha.com/article/1855121-time-warner-management-presents-at-morgan-stanley-2013-technology-media-and-telecom-conference-transcript>.

¹³³ The methodology for this calculation is described above. Calculations based on Supplemental Data; Leichtman Research Group, *About 295,000 Add Broadband in the Second Quarter of 2013*, August 20, 2013, *available at* <http://www.leichtmanresearch.com/press/082013release.html>; 2014 *Internet Access Services Report*.

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is merger-specific. I noted earlier that OVDs require a critical mass of subscribers to operate and have positive feedback effects that can accelerate growth or decline. Post-Transaction Comcast, acting with another large ISP or coalition of ISPs, would be able to foreclose a greater portion of an OVD's subscribers than it would be able to foreclose absent the Transaction, acting with that same large ISP or coalition of ISPs.

IV. Conclusion

182. I have reached two principal conclusions.

183. The economic evidence and reasoning relied on by Comcast and Dr. Israel to conclude that it is not possible that the Transaction could harm competition and consumers are not reliable. Their conclusion rests on flawed data that wrongly shows that consumers have many broadband alternatives and on the assertion that Comcast does not have the ability or incentive to foreclose OVDs when it plainly did foreclose Netflix.

184. The Transaction poses considerable risk to competition and consumers because it would increase Comcast's already substantial market power over OVDs and their customers significantly. In particular, the Transaction could harm competition and consumers in two ways. The economic evidence and empirical analysis that I have presented shows that the Transaction would likely increase the terminating access fees that Comcast would demand and receive from OVDs significantly over the fees that Comcast would demand and receive absent the Transaction. It could also enable Comcast to retard the development of OVDs

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thereby reducing OVD competition and innovation and perpetuating Comcast's substantial market power as a broadband and video programming provider.

* * *

Appendix A: Curriculum Vita

David S. Evans
Chairman
Global Economics Group

CONTACT DETAILS

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Boston, Mass 02108

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OVERVIEW

David S. Evans is the Chairman of the Global Economics Group in the firm's Boston office and has broad experience in the economics of antitrust, intellectual property, and financial regulation. Dr. Evans has an international practice and has worked on matters in the United States, the European Union, China, Brazil, Australia, and other jurisdictions. He has provided economic advice on a wide range of industries but has special expertise in financial services, internet-based media, and information-technology based businesses. He is one of the world's leading authorities on multi-sided platforms (also known as two-sided markets).

Dr. Evans currently teaches economics at the University of Chicago Law School, where he is a Lecturer, and at the University College London, where he is a Visiting Professor. He is the Founder and Publisher of *Competition Policy International* and is on the editorial boards of *Concurrences* and *The Review of Network Economics*.

From 2004 to 2011, Dr. Evans was a Managing Director of LECG, where he was the head of its global antitrust practice and Vice Chairman of LECG Europe. Previously, he was Senior Vice President at NERA (1989-2004) where he was also a member of the management committee and board of directors. He received his Ph.D. in Economics from the University of Chicago in 1983 and subsequently taught at the Department of Economics and the Law School at Fordham University in New York.

EDUCATION

1979-1983

University of Chicago

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Ph.D. and MA in 1983

Specialized in econometrics, industrial organization, and labor economics

1972-1975

University of Chicago

BA in Economics in 1975

Completed first year of graduate program

EMPLOYMENT HISTORY

2011-

Global Economics Group

Chairman

2004-

Market Platform Dynamics

Founder and Managing Director

2004-

Competition Policy International

Founder and Publisher

2006-

University of Chicago Law School

Lecturer, teaching various advanced courses in antitrust

2004-

University College London

Visiting Professor in the Faculty of Laws, teaching economics of antitrust

Executive Director, Jevons Institute for Competition Law and Economics

2004-2011

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LECG, LLC

Vice Chairman, LECG Europe

Head, Global Competition Policy Practice

Member of the boards of directors of various subsidiaries

1988-2004

NERA Economic Consulting

Senior Vice President

Member of the Management Committee

Member of the Board of Directors

1983-1995

Professor of Law, Fordham University Law School (1985-1995)

Associate Professor of Economics (1983-1989) (tenure as of 1988)

APPEARANCES AND TESTIMONY

Dr. Evans has testified before arbitrators and Federal courts in the United States, and the General Court of the European Union. He has made personal appearances before or presented written testimony to the Australian Competition and Consumer Commission, European Commission, Federal Trade Commission, the U.S. Department of Justice, and the Securities and Exchange Commission. He has also testified before the House Financial Services Committee, the House Oversight Committee, and the Senate Banking Committee.

Examples of Dr. Evans's clients for whom he has made public submissions and appearances include Bloomberg, Google, Michael Tyson, Microsoft, Organization for Economic Co-operation and Development, and Visa.

REPRESENTATIVE MATTERS

Antitrust and Intellectual Property

Dr. Evans has worked on mergers, monopolization and abuse of dominance, and joint venture cases in multiple jurisdictions. A number of his matters have involved the intersection of antitrust and intellectual property and the antitrust of information technology/on-line businesses. Representative matters include:

- *United States v. Microsoft* on trial and remand regarding remedies and *Microsoft v. Commission of the European Communities* on tying and interoperability on behalf of

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Microsoft;

- Monster's acquisition of Yahoo! HotJobs before the Federal Trade Commission;
- WPP's acquisition of Taylor Nelson Sofres before the European Commission;
- Google's acquisition of DoubleClick for various third-party intervenors before the Federal Trade Commission, European Commission and Australian Competition and Consumer Commission;
- Investigation of VisaNet and Redecard by the Central Bank of Brazil and other regulatory authorities concerning certain exclusivity agreements and practices in the payment card industry;
- In *Twombly v. Bell Atlantic*, chief author of amicus brief by economists submitted to the United States Supreme Court in support of a grant of a writ of certiorari and in support of reversal; and
- In *Qihoo v. Tencent*, submitted reports to The Supreme People's Court, The High People's Court of Guangdong Province, People's Republic of China, on behalf of Tencent regarding Qihoo's market definition and abuse of dominance claims against Tencent.

Financial Regulation

Dr. Evans has worked on regulatory matters involving payment systems, consumer financial protection, derivatives regulation, and the regulation of exchanges. Representative matters include:

- Analysis of Consumer Financial Protection Bureau regulations for various financial institutions;
- Debit card regulatory proceedings before the Federal Reserve Board on behalf of various financial institutions;
- Regulation of the OTC commodity derivatives for the Government of Singapore;
- Analysis of Security Exchange Commission orders concerning pricing of market data submitted reports and presentations to the SEC on behalf of Bloomberg; and
- Assistance in creating educational programs for House Financial Services Committee members concerning the recent financial crisis.

HONORS AND RANKINGS

- Winner of the Business, Management & Accounting category in the 2006 Professional/Scholarly Publishing Annual Awards presented by the Association of American Publishers, Inc. for *Invisible Engines: How Software Platforms Drive Innovation and Transform Industries*.
- The International Who's Who of Competition Lawyers & Economists 2011.
- Named among the "Top 25 Competition & Antitrust Practitioners" by Best of the Best USA, Legal Media Group.

PUBLICATIONS

Dr. Evans' publications since 2000 are largely available online at Evans' SSRN Page and his

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publications before 2000 are mostly available at Evans' IDEAS Page.

Books

Platform Economics: Essays on Multi-Sided Businesses, (Boston, Competition Policy International, 2011), with R. Schmalensee, M. Noel, H. Chang, and D. Garcia-Swartz.

Interchange Fees: The Economics and Regulation of What Merchants Pay for Cards, (Boston, Competition Policy International, 2011), with R. Schmalensee, R. Litan, D. Garcia-Swartz, H. Chang, M. Weichert, A. Mateus.

Trustbusters: Competition Authorities Speak Out (Boston: Competition Policy International, 2009), co-editor with F. Jenny.

Catalyst Code: The Strategies of the World's Most Dynamic Companies (Massachusetts: Harvard Business School Press, 2007), with R. Schmalensee.

Invisible Engines: How Software Platforms Drive Innovation and Transform Industries, (Massachusetts: MIT Press, 2006), with A. Hagiu and R. Schmalensee.

Paying with Plastic (Massachusetts: MIT Press, first edition 1999, second edition 2005), with R. Schmalensee.

Microsoft, Antitrust and the New Economy: Selected Essays (New York: Kluwer Academic Publishers, 2002), editor.

The Economics of Small Businesses: Their Role and Regulation in the U.S. Economy (New York: Holmes and Meier, 1986), with W. Brock.

Breaking Up Bell: Essays on Industrial Organization and Regulation (New York: North Holland, 1983), editor and co-author of eight of ten chapters.

Articles and Book Chapters

"The Antitrust Analysis of Multi-Sided Platform Businesses," (with R. Schmalensee), in *Oxford Handbook on International Antitrust Economics*, R. Blair and D. Sokol, eds., Oxford: Oxford University Press, forthcoming.

"The Impact of the U.S. Debit Card Interchange Fee Caps on Consumer Welfare: An Event Study Analysis," (with H. Chang and S. Joyce), University of Chicago Coase-Sandor Institute for Law & Economics Research Paper No. 658, 2013.

"Market Definition Analysis in Latin America with Applications to Internet-Based Industries," (with E. Mariscal), Working Paper (University of Chicago Law School and Centro de Investigacion y Docencia Economica), 2013.

"Paying with Cash: A Multi-Country Analysis of the Past and Future Use of Cash for Payments by Consumers," (with K. Webster, G. Colgan, and S. Murray), Working Paper (University of

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Chicago Law School and Market Platform Dynamics), 2013.

“Payments Innovation and the Use of Cash,” (with K. Webster, G. Colgan, and S. Murray), Working Paper (University of Chicago Law School and Market Platform Dynamics), 2013.

“The Consensus Among Economists on Multisided Platforms and Its Implications for Excluding Evidence that Ignores It,” *CPI Antitrust Chronicle*, 2013, 6(1).

“Analyzing Competition among Internet Players: Qihoo 360 v. Tencent,” (with V. Y. Zhang and H. Chang), *CPI Antitrust Chronicle*, 2013, 5(1).

“Attention Rivalry among Online Platforms”, *Electronics Intellectual Property, MIIT China*, 2013, 9, 30-41(in Chinese).

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“Enhancing Financial Benchmarks: Comments on the OICU-IOSCO Consultation Report on Financial Benchmarks,” Working Paper (University of Chicago Law School and Global Economics Group), 2013.

“The Role of Keyword Advertising in Competition among Rival Brands,” (with Elisa Mariscal). *CPI Antitrust Chronicle*, 2012, 12(1).

“Will the Wheatley Recommendations Fix LIBOR?” (with R.M. Abrantes-Metz). *CPI Antitrust Chronicle*, 2012, 11(2).

“Governing Bad Behavior by Users of Multi-Sided Platforms,” *Berkeley Technology Law Journal*, 2012, 27(2).

“Replacing the LIBOR with a Transparent and Reliable Index of Interbank Borrowing: Comments on the Wheatley Review of LIBOR Initial Discussion Paper,” (with R.M. Abrantes-Metz), University of Chicago Institute for Law and Economics Olin Research Paper No. 620, 2012.

“Two-Sided Market Definition,” in *Market Definition in Antitrust: Theory and Case Studies*, 2012.

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“Market Definition and Merger Analysis for Multi-Sided Platforms,” (with R. Schmalensee), 2012, *available at* <https://www.competitionpolicyinternational.com>

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“Payments Innovation and Interchange Fees Regulation: How Inverting the Merchant-Pays Business Model Would Affect the Extent and Direction of Innovation,” Working Paper (University of Chicago Law School), 2011.

“How Changes in Payment Card Interchange Fees Affect Consumers Fees and Merchant Prices: An Economic Analysis with Applications to the European Union,” with A.M. Mateus, Working Paper (University of Chicago Law School and New University of Lisbon), 2011.

“Economic Analysis of Claims in Support of the ‘Durbin Amendment’ to Regulation Debit Card Interchange Fees,” with H.H. Chang and M.M. Weichert, Working Paper (University of Chicago Law School, Global Economics Group, and Market Platform Dynamics), 2011.

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TESTIMONY

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Appendix B: Calculations Using the NTIA's National Broadband Map

1. This appendix describes the methodology I used when performing calculations using the NTIA's National Broadband Map. The primary focus is on the results reported in Table 2. My other calculations using this dataset generally employ the same procedures, except as noted in this Appendix.
2. Start with the NTIA data for December 31, 2013.¹³⁴ Limit the data to Census blocks whose populations are reported in the 2010 Census Summary File 1.¹³⁵ This excludes America Samoa, Northern Mariana Islands, Guam, and the U.S. Virgin Islands, and includes the fifty states, the District of Columbia, and Puerto Rico.
3. Unless otherwise stated, use both of the two wired broadband provider datasets (the one for large Census blocks and the one for small Census blocks), and exclude the wireless broadband provider dataset. Unless otherwise stated, exclude resellers (Provider_Type equals 2) and providers serving only enterprise or governmental customers (End_User_Category equals 2, 3, or 4).
4. Use the holding company name (Hoconame) to identify distinct providers. Note that this is conservative, since there are a small number of instances where a given holding company has multiple spellings of its name in the dataset.

¹³⁴ National Broadband Map, December 31, 2013, *available at* <http://www.broadbandmap.gov/data-download>.

¹³⁵ U.S. Census Bureau, 2010 Census, Summary File 1, *available at* <http://mcde.missouri.edu/cgi-bin/uexplore?/pub/data/sf12010>.

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5. To account for the divestiture transactions, use the following lists of census blocks and tracts:
- a. The census tracts being transferred from Charter to Comcast listed in the Revised Appendix A.1 to the July 11 Letter, which is included with the July 28 Letter.¹³⁶
 - b. The Census blocks being transferred from Charter to Comcast that are part of Census tracts, which are only being partially transferred and are listed in Appendix A.2 to the July 28 Letter.¹³⁷
 - c. The Census blocks being transferred from Time Warner Cable to Charter listed in Appendix B.1 to the July 11 Letter.¹³⁸
 - d. The Census blocks being transferred from Comcast to SpinCo listed in Appendix C.1 to the July 11 Letter.¹³⁹
 - e. The Census blocks being transferred from Comcast to SpinCo that are part of Census tracts only being partially transferred and are listed in Appendix A.4 to the July 28 Letter.¹⁴⁰

¹³⁶ Letter from Francis M. Bruno, Counsel, Comcast, to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (July 28, 2014) (“July 28 Letter”), Revised Appendix A.1 to July 11 Letter.

¹³⁷ July 28 Letter, Appendix A.2.

¹³⁸ Letter from Kathryn A. Zachem, Comcast, et al., to Marlene H. Dortch, Secretary, Federal Communications Commission, MB Docket No. 14-57 (July 11, 2014) (“July 11 Letter”), Appendix B.1

¹³⁹ July 11 Letter, Appendix C.1.

¹⁴⁰ July 28 Letter, Appendix A.4.

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6. Use these lists to identify holding company-block combinations where the holding company will change as part of the divestiture, and set the new holding company equal to the post-divestiture holding company.
7. In each block, find the highest maximum advertised speed for each holding company offering service in that block.¹⁴¹ For calculations involving the pre- or post-divestiture holding company, this will require taking the maximum over both Comcast and Time Warner Cable in the rare cases where both companies offered residential broadband service in the same Census block.
8. For each block, get the population from the 2010 Census Summary File 1.
9. For each block, count the number of broadband providers other than Comcast or Time Warner Cable, that provide service with a maximum advertised download speed meeting the appropriate threshold (e.g., 10 Mbps or 25 Mbps). If a competing provider has a download speed at least as great as that of Comcast or Time Warner Cable in that block, count it as meeting the speed threshold, even if it does not. Set a flag indicating whether the number of such competitors in that block is zero.
10. Then, aggregate over blocks. Specifically, calculate the population-weighted average number of alternative wired alternatives meeting the speed threshold, and count the total population in blocks where the number of such competitors

¹⁴¹ Some calculations in my report do this slightly differently. For example, when I report that cable and fiber speeds of 25 Mbps and above were available to 93 percent of people in Census blocks where cable and fiber were offered and speeds of 10 Mbps and above were available to 99 percent, I take the maximum speed for each technology in each block, rather than the maximum speed for each holding company.

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equals zero. Limit the sample to blocks where the company of interest (Comcast, Time Warner Cable, the pre-divestiture combined company or the post-divestiture combined company) is present.

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The foregoing declaration has been prepared using facts of which I have personal knowledge or based upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my information, knowledge, and belief.

Executed on August 25, 2014

A handwritten signature in black ink, appearing to read 'DSE', with a horizontal line extending from the end of the signature.

David S. Evans
Chairman
Global Economics Group, LLC

CERTIFICATE OF SERVICE

I hereby certify that, on this 27th day of August 2014, I caused a copy of the foregoing Petition to Deny of Netflix, Inc. to be filed electronically with the Commission using the ECFS system and caused a copy of the foregoing to be served upon the following individuals by Courier or First Class Mail:

Matthew A. Brill
LATHAM & WATKINS LLP
555 11th Street, NW, Suite 1000
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Washington, DC 20001
Counsel for Charter Communications, Inc.

Sincerely,



Andrew W. Guhr
Steptoe & Johnson LLP